3.20 CULTURAL RESOURCES

SYNOPSIS

Overview:

Effects on cultural resources are defined as impacts to all buildings, sites, structures, objects, and districts, that are considered to have historical or cultural value, including those sites recommended eligible for the National Register of Historic Places (NRHP) such as archaeological resources. Field surveys have revealed 41 cultural resources within the proposed area of potential effects (APE) identified for the Donlin Gold Project. Complete survey of the APE, however, has not yet been conducted. Consequently, additional resources may be identified during additional survey prior to ground disturbing activity. Based on current information, 10 of the 41 identified sites are recommended as eligible for inclusion in the NRHP and one, the Iditarod National Historic Trail (INHT), is considered eligible for listing on the NRHP. The effects analysis completed for the EIS is based on these preliminary recommendations, which have not yet been subject to formal determinations of eligibility. Formal determinations must be submitted for approval to the lead and/or federal land management agency, and concurred with by the Office of Historic Preservation (SHPO).

The Corps, as the lead federal agency responsible for the development of the EIS under NEPA and compliance with the National Historic Preservation Act, is in the process of developing a Programmatic Agreement (PA) that would describe how the Section 106 process will be completed for this project. This includes identification and evaluation of cultural resources, minimization and mitigation of impacts, monitoring of construction, and procedures for responding to inadvertent discovery of cultural resources. The PA will be written and executed by responsible parties, such as the Corps, SHPO, and BLM, in consultation with local governments, Alaska Native Tribes, and other consulting parties. The PA would address management of these cultural resources as well as any others discovered during project implementation if the project is permitted.

Summary of Existing Conditions:

If the proposed project moves forward, activities affecting historic properties (i.e. cultural sites determined eligible for nomination to the National Register) would be governed by the PA discussed above. Those impacts that could not be avoided would be high in intensity and permanent in duration. However, data recovery and other mitigation could be implemented through the PA to adequately offset or resolve adverse effects.

Mine Site: Of eight cultural resources identified within the APE of the proposed mine site, one, the historic Lewis Gulch Cabin (IDT-00260), is recommended as eligible for inclusion in the NRHP. Development of the mine site would have an adverse effect to this resource as defined under the NHPA. However, through consultation, data recovery could satisfactorily mitigate an

adverse effect. An additional historic cabin site (IDT-00261) and a prehistoric lithic scatter (IDT-00292), unevaluated for the NRHP but assumed eligible for the purposes of analysis, would not be physically disturbed by developing the mine site as proposed. These sites are located within the larger APE used for analysis, but are outside of areas proposed for ground-disturbing project activities.

Transportation Facilities: Three cultural resources have been identified within the area affected by the proposed transportation facilities (one in Alternative 2 and two in Alternative 4. Depending upon the alternative selected, a prehistoric lithic scatter (RUS-00112) recommended as eligible for inclusion in the NRHP could be subject to an adverse effect from the proposed transportation facilities, as defined under the NHPA. However, through consultation, data recovery could help to mitigate the adverse effect. A prehistoric occupation site (SLT-00094), recommended as eligible for inclusion in the NRHP, would not be disturbed. A reported village location (RUS-00091) has not been evaluated for eligibility for inclusion in the NRHP, but is assumed eligible for the purposes of analysis. This resource is located within the larger APE used for analysis, but is not within the construction footprint and is not anticipated to be affected by the transportation facilities.

Pipeline: Archaeological surveys identified 29 sites within a 300-foot wide area of the pipeline corridors (proposed APE or equivalent area for alternatives). Of these, 7 prehistoric sites are recommended as eligible for the NRHP. These include 6 prehistoric lithic scatters (IDT-00275, IDT-00288, TAL-00166, TYO-00278, MCG-00060, and MCG-00071) and 1 prehistoric animal bone scatter (TYO-00279). Under the NHPA, up to 6 of the sites would be adversely affected by the proposed pipeline. However, through consultation, data recovery could help to mitigate the adverse effect. If the project is permitted, final engineering design would consider the presence of identified cultural resources and avoid impacts to cultural resources where required, and minimize known impacts to potential resources. The proposed pipeline component would also impact the INHT, during both the construction phase of the pipeline as well as through a change in the setting of the INHT.

Expected Effects:

Alternative 1: No Action – This alternative would not affect cultural resources in the Project Area. No new changes are expected, beyond those that have already resulted from the exploration and baseline studies work.

Alternative 2: Donlin Gold's Proposed Action

Mine Site: The cultural resources at the mine site are important in context, recommended as eligible for the NRHP. At the proposed mine site, a site containing cabin ruins (IDT-00260), would be impacted, and the summary effect on cultural resources would be considered moderate.

Transportation Facilities: Impacts are not anticipated to cultural resources in relation to the transportation facilities. A prehistoric occupation site (SLT-00094) is located within the APE, but is not anticipated to be affected.

Pipeline: Unavoidable impacts along the length of the proposed pipeline corridor, coupled with impacts to the INHT, are expected to result in a moderate summary impact. Specifically, implementation of Alternative 2 would result in both direct temporary construction-related impacts and longer-term indirect impacts to the cultural setting through effects to visual resources. Under Alternative 2, the buried natural gas pipeline would be collocated with the INHT for 4.0 miles and adjacent (within 1,000 feet) for approximately 10.5 miles.

Other Action Alternatives: The summary effects of Alternatives 3A, 3B, and 5A on cultural resources would be similar to those of Alternative 2. Differences of note for other action alternatives include:

- *Alternative 4 (Birch Tree Crossing [BTC] Port)* would include approximately 2.5 times as much access road construction, and an alternative port site. Two archaeological sites have been identified in a cultural resources inventory of the BTC Port site and access road.
- *Alternative 6A (Dalzell Gorge Route)* would increase the extent of 1,000-foot proximity to the INHT from 10.5 miles to 29.4 miles and increase co-location from 4.0 to 14.5 miles—a greater impact on this cultural resource. The total number of known archaeological sites affected would be reduced as the five sites affected in the relevant pipeline segment under Alternative 2 that would be avoided and would be partially offset by the presence of two other sites in the proposed corridor of Alternative 6A.

3.20.1 REGULATORY ENVIRONMENT

For the purposes of this EIS, a cultural resource is defined as all buildings, sites, structures, objects, districts, and landscapes that are considered to have historical or cultural value. A wide range of cultural resource types can include, but are not limited to:

- Historic properties are defined as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria" (36 CFR 800.16), and as used in Section 106 of the National Historic Preservation Act (NHPA). It is important to note that under the National Environmental Policy Act (NEPA), impacts to all types of cultural resources are considered even if they are not NRHP eligible, i.e., designated as "historic properties" per the NHPA.

- Native American (in this case, Native Alaskan) cultural items such as human remains, funerary items, sacred objects, and objects of cultural patrimony.
- Archaeological resources, which include precontact (i.e., dating to the period in North America predating the arrival of Euroamericans) and historic archaeological sites that may or may not be historic properties.
- Cultural uses of the natural environment, such as ceremonial or other religious use of places, plants, animals, and minerals. These types of resources can include Indian (in this case, Native Alaskan) sacred sites that may or may not be considered as Traditional Cultural Properties (TCPs), cultural landscapes, ethnographic landscapes, rural historic landscapes including trails and transportation routes, and historic mining landscapes, for example.

Three regulations are particularly relevant to evaluating project impacts on cultural resources: NEPA, Section 106 of the NHPA, and the National Trails System Act (NTSA). NEPA requires that project impacts to cultural resources, considered a subset of the "human environment," (40 CFR 1508.4) be evaluated and disclosed. Cultural resources considered under NEPA include but are not limited to historic properties (as more narrowly defined in the NHPA, discussed below).

Permitting, construction, operations, and closure of the proposed project will require compliance with Section 106 of the NHPA (16 USC Section 470), its implementing regulations (36 CFR Part 800), and the Corps' NHPA Section 106 procedures (33 CFR Part 325, Appendix C). These regulations require federal agencies to consider the effects of their actions on historic properties. " The regulations require federal agencies to identify historic properties within the APE, determine if an undertaking will constitute an adverse effect to identified historic properties, and seek to resolve any adverse effects. Cultural resources are evaluated for inclusion in the National Register based upon established criteria listed in 36 CFR Part 60. Cultural resources can be determined eligible for inclusion in the National Register if they possess integrity, the capacity to convey their significant historic associations, and meet one of four criteria listed in Title 36, CFR, Part 60:

> *The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:*
>
> *(a) are associated with events that have made a significant contribution to the broad patterns of our history; or*
>
> *(b) are associated with the lives or persons significant in our past; or*
>
> *(c) embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or*
>
> *(d) have yielded, or may be likely to yield, information important in prehistory and history.*

If significant (i.e., National Register-eligible) resources are identified, then federal agencies are directed to take prudent and feasible measures to avoid or reduce adverse impacts.

Prehistoric archaeological sites are most often found eligible under Criterion (d), while archaeological sites containing historical deposits as well as some prehistoric sites are also often considered under criteria (a) through (c) when applicable. Likewise, historic buildings and structures (as opposed to archaeological sites) are assessed under a variety of NRHP criteria. While nearly all sites have the potential to yield information useful in addressing a limited number of research questions, this limited potential is not considered sufficient to qualify a site for inclusion on the NRHP under Criterion (d). By establishing guidelines, agencies have clearly set the precedent that not all information is important, and thus, not all sites are important. Federal guidelines encourage the use of a set of research questions that are generally recognized as important research goals as a means of evaluating significance. If a site contains information that is demonstrably useful in answering such questions, it can be considered an important site. NRHP evaluation guidelines state that a site must retain integrity to be considered eligible under one or more of the criteria.

The NRHP describes historic resources as standing or collapsed buildings, unique engineering designs, mines, ranches, and railroad grades that are at least 50 years old, or have achieved significance within the past 50 years. Archaeological resources are prehistoric or historic remains of human lifeways or activities that are at least 50 years old, and include artifact concentrations or scatters, whole or fragmentary tools, rock carvings or paintings, and buildings or structures. Resources that incorporate geographic areas, including both cultural and natural features, and that are associated with historic events or other cultural values include Traditional Cultural Properties, cultural landscapes, ethnographic landscapes, rural historic landscapes, and historic mining landscapes.

The NTSA (16 USC Section 1241) addresses management of national recreation, scenic, and historic trails including the Iditarod National Historic Trail (INHT), and connecting or side trails providing access to the INHT. The NTSA directs the Secretary of the Interior or the Secretary of Agriculture to administer and manage designated National Trails. Section 7(c) of the NTSA requires the assessment of potential effects of proposed actions on designated National Trails. Administering agencies may permit uses on the trail provided they do not "substantially interfere with the nature and purpose of the trail." While BLM is the federal administrator for the INHT, the INHT traverses federal, state, and private lands. Federally-managed segments of the INHT would not be affected under any alternative evaluated in this EIS, with the possible exception of a 1 mile segment of trail near Rohn under Alternative 6A. The affected segments of the INHT are on state land.

Numerous other laws, regulations, and Executive Orders protect cultural resources. The American Indian Religious Freedom Act of 1978 (42 USC Section 1996) requires that federal agencies consider the effects of their actions on cultural resources that are of religious significance to Native Americans and Alaska Natives. Native American and Alaska Native graves, burial grounds, and associated funerary objects on federally managed lands are protected by the Native American Graves Protection and Repatriation Act (25 USC Sections 3001-3013) (NAGPRA).

Alaska State laws are also applicable to the discovery of human remains in Alaska. The State Medical Examiner has jurisdiction over all human remains in the state, regardless of age. Specifically, AS 11.46.482(a)(3), which applies to all lands in Alaska, makes the "intentional and unauthorized destruction or removal of any human remains or the intentional disturbance of a grave" a class C felony; AS 41.35.200, which applies only to State lands, makes the disturbance

of "historic, prehistoric and archaeological resources" (including graves, per definition) a class A misdemeanor; and AS 18.50.250, which applies to all lands in Alaska, requires permits for the transport, disinterment, and reinterment of human remains.

Executive Order 13007--Indian Sacred Sites directs federal agencies to allow Native Americans to worship at sacred sites located on federal property and to avoid adversely affecting such sites to the extent practicable. The Antiquities Act of 1906 (16 USC Section 431) establishes penalties for damage and destruction of antiquities and allows for designation of historic landmarks on federal lands. The Archaeological Resources Protection Act of 1979 (16 USC Section 470) establishes a permit process on public and Native American lands, and provides penalties for violations and damages to archaeological sites. Executive Order 13287--Preserve America directs federal agencies to build partnerships with local governments, Indian tribes, and the private sector to preserve cultural resources, and improve the stewardship of cultural resources.

In addition, the Alaska Historic Preservation Act (AS 41.35) states that the policy of the State is to preserve and protect the historic, prehistoric, and archaeological resources of Alaska and asserts the State's title to all historic, prehistoric, and archaeological resources situated on land owned or controlled by the State, including tideland and submerged land. Further regulations not listed here may also apply to the project.

3.20.1.1 PROGRAMMATIC AGREEMENT

Because of the project's size, scope, and the various alternatives under consideration, the Corps as the lead federal agency has initiated preparation of a PA as a management tool to address cultural resources that may be affected by the proposed project. The PA will outline measures to ensure compliance with Section 106 of the NHPA, including but not be limited to protocols for the identification and evaluation of historic properties, permitting requirements, treatment of historic properties, monitoring requirements, inadvertent discovery protocols, curation, and treatment of human remains. The PA will be a legal document with signatories and concurring parties. Current anticipated signatories and concurring parties include the Corps, the SHPO, the ACHP, the BLM, local governments, and Alaska Native Tribes and organizations.

3.20.2 AFFECTED ENVIRONMENT

The purpose of this section is to describe cultural resources within the project's APE for the proposed Donlin Gold Project, which is a geographic area or areas which may be directly or indirectly affected by the project. For cultural resources, effects could be the result of ground disturbances, visible or audible disturbances, or changes in public access, traffic patterns or land use.

Information presented herein is based on a review of data on file at the Alaska Heritage Resource Survey (AHRS) and the extensive series of cultural resources survey reports prepared for the proposed project. While the surveys cover the majority of the APE, not all areas of the proposed APE have been surveyed for cultural resources. Additional surveys would likely result in the identification of additional resources. Also, consultation between the agencies and tribes could identify additional resources not yet documented for the project. This section discusses cultural resources known to be present based on these previous studies as well as the potential of the proposed project to affect as yet undiscovered cultural resources.

This section begins with an overview of the APE for cultural resources as currently proposed. The APE describes the areal extent of where potential project impacts to cultural resources could occur. Next, an overview of the precontact, ethnohistoric, and historical cultural setting is provided as context for the cultural resources found in the EIS Analysis Area. This cultural setting section is followed by a discussion of previous archaeological investigations that have been conducted in association with the proposed development since 2004. These investigations, discussed below, have targeted the identification of cultural resources in the proposed mine area, as well as along the transportation and proposed pipeline corridors. The sections that follow address identified cultural resources within each of these areas.

3.20.2.1 AREA OF POTENTIAL EFFECT (APE)

Donlin Gold has proposed to the Corps and the SHPO a draft APE for Section 106 of the NHPA that includes the following spatial parameters (Donlin Gold 2015c). The final APE will be determined through consultation and will be agreed upon as part of the PA development process.

3.20.2.1.1 MINE SITE AND TRANSPORTATION FACILITIES

- Donlin Gold Lease Area
- Potential Airport Lease Boundary
- 0.25 mile buffer around the proposed Jungjuk Port Site
- Roads: 250 feet each side of centerline (500 feet total) all roads west of Crooked Creek
- Ancillary Facilities: 150-foot buffer around all material sites west of Crooked Creek

3.20.2.1.2 PIPELINE

- Proposed pipeline planning ROW (300 feet wide)
- Roads: 100-foot buffer each side of proposed road centerlines and footprints
- Ancillary Facilities: 100-foot buffer around all above ground facilities (compressor station, fault crossing, etc.), 50-foot buffer around remaining footprint
- Transmission Line: 30-foot buffer each side (60 feet total)
- Water Extraction Point: 100-foot buffer

The following sections discuss the cultural resources within the APE (Donlin Gold 2015c). Consultation will continue between the parties and the APE may be adjusted in the future. Specifically, the proposed APE may be refined in conjunction with a visual assessment currently in progress regarding indirect effects to additional portions of the INHT.

3.20.2.2 PREHISTORIC AND HISTORIC CONTEXT

The area of southwestern Alaska within which the EIS Analysis Area is located lies within the western Subarctic culture area, an area occupied by Athabascan-speaking groups in the recent past. Given the vast size and remote nature of this area, its prehistory remains poorly

understood and most current knowledge comes from coastal or near coastal sites. Archaeological investigations within interior Western Alaska began in the 1920s and 1930s and have been conducted sporadically since that time, with more recent investigations largely linked to specific projects. Regional chronological sequences have been developed and refined by Ackerman (et al. 1979, 1996a, 1996b, 1996c), Clark (1981), Dumond (1984), and others, and have been summarized by Reuther et al. (2004). From oldest to most recent, these traditions have been termed Paleoindian, American Paleoarctic, Northern Archaic, Arctic Small Tool Tradition, Western Thule / late prehistoric Eskimo, and Athabascan (Reuther et al. 2004).

Archaeologists currently believe that the earliest residents of Southwestern Alaska are believed to have migrated from Siberia along a land bridge, though evidence of Paleoindian sites is scarce. The Paleoindian Tradition, dated 10,000 to 8,000 years ago, is the earliest occupation recognized in the region. Though there is some evidence suggesting human occupation of Southwest Alaska prior to 10,000 years ago, including cut marks on a 15,000 year old caribou humerus (Ackerman 1996a), the earliest sites with unequivocal artifacts date to approximately 10,000 years ago. The nature of archaeological assemblages associated with these sites implies temporal and cultural connections with early sites in more temperate latitudes such as the Great Plains and the American Southwest; fluted points are believed to have been a plains culture element that diffused northward (Clark 1981).

With the exception of these few isolated finds, evidence for Paleoindian occupation is rare. More commonly encountered is evidence of microblade technology, characteristic of the American Paleoarctic Tradition and generally thought to date to between about 10,000 and 7,000 years ago (Reuther et al. 2004). Side-notched spear points, large knives, chopping tools, scrapers, net sinkers, and burins are associated with the microblade tradition, which emerged coterminous with the late Paleoindian culture and suggests the arrival of new populations traveling across the land bridge and arriving in Western Alaska (Clark 1981). Distinctive artifacts found in American Paleoarctic sites are remarkably similar to stone technologies from Northeast Eurasia, suggesting cultural connections across the Bering Land Bridge. American Paleoarctic tool kits are generally thought to have been oriented toward the production of composite antler and stone projectiles, used to hunt late Pleistocene-early Holocene fauna. This cultural tradition of production of parallel-sided prismatic stone blades and microblades underwent several regional variations and spanned the period from about 10,000 to 2,000 years ago.

Sometime after 6,000 years ago, side-notched projectile point forms begin to appear in interior, northern, and western Alaska archaeological assemblages, a hallmark of the Northern Archaic tradition dated to 6,000 to 2,000 years ago (Reuther et al. 2004). The broad occurrence of this point type throughout interior and northern Alaska and the Yukon Territory, along with distinctive scraping implements and other lithic tools, is thought to perhaps represent the spread of a new boreal forest-oriented cultural tradition, though this interpretation is in part contradicted by similar sites in tundra environments.

Following the Northern Archaic Tradition, beginning roughly 4,500 years ago is a prehistoric culture known as the Arctic Small Tool tradition, known for tiny, finely-flaked stone tools (Reuther et al. 2004). The dramatic change in stone tool technology from the earlier Northern Archaic to the later Arctic Small Tool tradition assemblages may mark the introduction of the bow and arrow, and is interpreted by many archaeologists as a direct ancestral lineage to modern Eskimo people in Alaska and the arctic regions of Canada and Greenland. Following

the gradual decline of the microblade tradition is the transition into prehistoric Athabaskan culture, from about A.D. 1 to 1900. This shift is associated with the appearance and abundance of side-notched points, along with the absence of microblade technology.

Archaeologists currently believe that the direct ancestors of the southwest Alaskan Yup'ik Eskimos were likely people of the Western Thule Tradition, dated to A.D. 900 to 1825.Typical artifacts include ground slate, chipped stone technology, heavy gravel temper pottery, snowshoes, hafted beaver-tooth knives, and birch bark baskets (Dumond 1984). Regional variants of the Western Thule Tradition are found throughout southwest Alaska. Subsistence was broad-based at this time, with both interior and coastal resource exploitation.

The proposed Project Area is also located within the traditional territory of the Deg Hit'an and Kolchan Athabascan groups (Reuther et al. 2004). Deg Hit'an territory extends along the lower Yukon and the middle and lower Kuskokwim, while the Kolchan territory stretches along the upper Kuskokwim River. In archaeological usage, the Athabascan tradition is a prehistoric culture attributed to ancestors of the northern Athabascan Indians of Alaska, whose history precedes Euroamerican contact. At present, sites in interior Alaska dating to at least 2,000 years ago and up to AD 1880 are generally attributed to the Athabascan tradition. In common usage, the Athabascan Tradition continues to the present. Early prehistoric Athabascan sites are characterized by subsurface housepit and cache features associated with a variety of flaked and ground stone, bone, and antler artifacts. Proto-historic (or late prehistoric) Athabascan sites include artifact assemblages predominately characterized by Alaska Native-made items with a small amount of non-Native trade goods, such as iron and glass beads. These goods were obtained through trade with other Alaska Native groups, and can be tied to the Hudson's Bay Company and Russian American Company fur trade, as well as prospector and missionary influence along the Yukon River (AD 1740-1850). Historic Athabascan sites (post-1850) generally contain a mixture of log cabin and house pit dwellings affiliated with a greater percentage of Euroamerican artifacts, and possibly changes in site location in order to obtain these goods.

3.20.2.2.1 REGIONAL ETHNOHISTORY

The Donlin Gold Project Area is located in the central Kuskokwim area, an area of overlap between both Yup'ik speaking Eskimo groups of the Y-K area and the Athabascan bands of interior Alaska. The villages of Stony River, Sleetmute, Red Devil, Crooked Creek, Chuathbaluk, Aniak, Upper Kalskag, and Lower Kalskag are considered central Kuskokwim villages. The central Kuskokwim region lies within the contemporary Yup'ik language area (Woodbury 1984). Yup'ik social organization was characterized by relatively autonomous territorial units prior to European contact and influence, but after contact included members of other areas and societies, both Native and non-Native. Salmon, moose, caribou, waterfowl and various other resources, obtained through harvesting or indirectly through trade, sustained the riverine populations.

Southwestern Alaska Eskimo groups shared a diversity of ethnic boundaries, many of which were blurred as a result of European contact effects (VanStone 1984b). VanStone (1984b) described this as an area that the Kusquqvagmiut group of Yup'ik Eskimos jointly occupied with the Georgetown subgroup of the Deg Hit'an Athabascans. Populations diminished by epidemic disease in the nineteenth and early twentieth centuries resulted in shifting spheres of cultural influence. The central Kuskokwim is at the intersection of three Alaska Native language

areas, the central Yup'ik, Deg Hit'an Athabascan (formerly known as Ingalik), and Dena'ina Athabascan languages and the current ethnicity of the villages reflects its complex history. Yup'ik Eskimos are the predominant residents of the villages of Lower and Upper Kalskag and Chuathbaluk. The villages of Sleetmute, Stony River, and Crooked Creek include individuals of Yup'ik, and Deg Hit'an or Dena'ina Athabascan descent, while Red Devil and the regional hub of Aniak are composed of both non-Native and Yup'ik people. Lime Village residents are primarily of Dena'ina Athabascan descent. The Deg Hit'an Indians are the westernmost Athabascan-speakers of interior Alaska and traditionally occupied territory along the middle Yukon and the upper Kuskokwim rivers.

Traditionally, the Dena'ina Athabascan people inhabited areas of Southcentral and Southwestern Alaska, particularly along Cook Inlet, and shared traits with both Eskimo and other Athabascans. The Inland Dena'ina groups along the Kuskokwim fished and hunted along the waterways, but resources were less abundant than on the coast. Inland populations consolidated into Lime Village, Nondalton and Pedro Bay by the 1970s. Considerable intermarriage occurred between the Stony River Dena'ina and Kuskokwim Deg Hit'an over at least the past 100 years. Although Inland Dena'ina Athabascan is the dominant cultural heritage of Lime Village, by the mid-1980s most residents were of mixed racial heritage.

Immigrant populations of Russian, English, American, Scandinavian, and various other outside groups have introduced cultural influences to the region throughout the past 200 years. The major sources of external cultural influence in the twentieth century have been resource development activities such as gold and mercury mining, trapping, and commercial fishing. The indirect impacts of statehood, 1960s social reform programs, and the passage of the Alaska Native Claims Settlement Act (ANCSA) in 1971 have also brought major changes to the social structure and cultural milieu in rural Alaska generally, and the central Kuskokwim villages in particular.

The closest known historic and modern settlements to the Donlin Gold Project area are Canoe Village and Crooked Creek. Canoe Village, or Agyahwagamiut in Yup'ik, was located along the right bank of the Kuskokwim River, approximately 12 miles south of the present location of Crooked Creek. Canoe Village was occupied in 1900, and in 1906 included three or four resident families. They soon began leaving because the river bank was eroding and by 1970 all the structures except for a cabin and smokehouse had washed away.

Oswalt (1980b) reports that Crooked Creek was known in Yup'ik as "Kupchaupuk," meaning Crooked Creek. In the 1840s, this was a summer camp of people from Kwigiumpainukamiut, a village across the river from Kolmakovskiy (Oswalt 1980b). An early historic village existed at the modern village site, but it had been abandoned before Dennis Parent settled here and opened his trading post in 1914-1915 (Oswalt 1980b).

When the Russians became familiar with the area in the 1830s, the population of this sector was small and consisted of predominantly Deg Hit'an Athabascans. A smallpox epidemic in 1838-39 killed many if not most of the Deg Hit'an Athabascans. At that time Yup'ik Eskimos from the lower Kuskokwim River were already moving upstream and assimilating the Deg Hit'an Athabascans, and by the early 1840s the Deg Hit'an on the Kuskokwim River had largely adopted the Yup'ik Eskimo way of life. The epidemic of 1900 presumably depleted both segments of the population, but its impact on the Deg Hit'an was more dramatic because of their smaller number. Soon after, increasing numbers of Yup'ik Eskimos moved into the region and further assimilated the surviving Deg Hit'an Athabascans. The modern population is

culturally Yup'ik Eskimo although numerous persons are of mixed Athabascan and Yup'ik Eskimo ancestry. By the late 1970s a small number of persons at Crooked Creek still spoke Deg Hit'an.

Crooked Creek village was established in 1909 as a way station for the Flat and Iditarod gold mining camps. The United States Geological Survey (USGS) reported it in 1910 as "Portage Village" because it was at the south end of a portage route up Crooked Creek to the Iditarod placer mining region. In 1914 or 1915, Dennis Parent founded a trading post upriver from the creek mouth in what would become the "upper village" of Crooked Creek (Oswalt 1980b). A post office was opened in 1927 and a school was built in 1928. Yup'ik Eskimos and Deg Hit'an Athabascans settled the "lower village". By the early 1940s, there was a Russian Orthodox Church, St. Nicholas Chapel, and several homes. The upper and lower portions of the village remain today. Gold production in the vicinity continued through the late 1980s, when Western Gold Mining and Exploration went out of business.

3.20.2.2.2 HISTORIC CONTEXT

The "discovery" of Alaska by Europeans is usually dated from Vitus Bering's second expedition in 1741; within a short time, Russian fur hunters began to exploit the rich sea otter grounds along the Aleutian chain. In 1778, Captain James Cook arrived in southern Alaska where, at Cook Inlet, Dena'ina Athabascans came to his ship to exchange furs and fish for iron. Cook noted that at this time, a few European goods were already in the possession of the Indians. At this time, while southern Alaska Indians and Eskimos were eager to trade with Europeans visiting in ships, attempts at settlement were opposed. As a result, with the exception of the Aleuts, Alaska's inhabitants remained relatively free of European influence (Townsend 1981).

In 1784, Russian fur traders established a post on Kodiak Island, destined to become one of the major headquarters of the Russian-American Company. Within 20 years, additional posts were established on the Kenai Peninsula and at Sitka, and Dena'ina and other Native groups were drawn more actively into the fur trade (Townsend 1981).

In 1832, Russians built fur trade stations at the junction of the Holitna and Kuskokwim rivers near Sleetmute; in 1833 at Lukin's Odinochka (the Russian term for a small trading post) further downstream; and in 1841 at Kolmakovskiy Redoubt. Archaeological investigations at Kolmakovskiy Redoubt suggest that although many trade goods of Russian-American Company origin were uncovered, and that the Athabascans of the Kuskokwim area appear to have been deeply involved and influenced by their participation in the fur trade, the Kuskokwim Yup'ik were marginal participants, at least as reflected in the longevity of their use of traditional artifacts (Oswalt 1980b). While the Kuskokwim area Athabascans appeared to have abandoned most of their traditional material culture, the Russians failed to greatly alter the economic lives of the Kuskokwim Yup'ik. Russian Orthodoxy, however, became an aspect of life in the region that persists to this day (Reuther et al. 2004).

Russian Orthodox missionaries followed traders into the middle and upper Kuskokwim region. These missionaries, and later Moravian missionaries, were centered at trading posts and had to travel extensively to meet with their parishioners. Many of the communities in the region had accepted, at least superficially, aspects of Christian ritual and belief by the mid-1800s (VanStone, 1984c).

The Russian-American Company abandoned Kolmakovskiy Redoubt in 1866. After the United States purchased the rights to Alaska from Russia in 1867, the Alaska Commercial Company operated and supplied Alaskan trading posts purchased from the Russians. These posts and others in the region under American operation failed to develop into lucrative ventures. The Moravian Church and Roman Catholic Church were also active in the region in the late 1800s. Missions, boarding schools, and orphanages brought new and different concepts of social, religious and cultural interaction to the region (Reuther et al. 2004).

Reindeer were introduced to Alaska in 1891 to provide food and clothing for Alaska Native people, and, in 1906, the Moravian church brought reindeer herding to the Kuskokwim area after the depletion of wild caribou stocks. The U.S. Department of the Interior Office of Education administered the program until 1929, using local schoolteachers to supervise herding operations. In the 1890s, the U.S. government hired indigenous Sami reindeer herders and their families to teach herding skills to Yup'ik and Inupiaq people. These herders helped build up the reindeer herds that provided food, clothing, and transportation for Alaskans during the 1920s and 1930s. The settlement of Akiak was an important herding locale, with 35,000 animals in the area, but the numbers declined dramatically shortly thereafter. Many of the Sami herders left after the decline of herding during the mid-1940s (Reuther et al. 2004).

Gold mining boomed in the Iditarod region of the Yukon River drainage in the early 1900s following the gold rushes in the Klondike and Nome areas. The Ganes Creek and Ophir Creek strikes in 1906 and Ruby Creek discovery in 1907 brought thousands of prospectors into the region. Subsequent discoveries on Otter Creek and Flat Creek brought many more. The town of Flat, located northeast of the Project Area, replaced Iditarod as both the supply center in 1910 and as the main supply town and population center of the district in the early 1920s (Reuther et al. 2004).

Gold was discovered on Donlin Creek in 1909. Between 1909 and 1956, various prospectors and placer miners worked the area by hand as well as by underground and hydraulic methods, producing 30,000 ounces of placer gold. From the 1970s until 1996, Robert Lyman and his heirs resumed sluice mining in the Donlin Creek area and placer-mined Snow Gulch; about 800 ounces of gold were recovered (Reuther et al. 2004).

The sheer numbers of immigrants influenced local culture during the gold rush. Prospectors came into the country on the heels of massive epidemics and subsequent population loss, bringing rapid cultural changes in the areas of communications, transportation, economics, and government. Towns sprung up in formerly sparsely populated areas, trails were transformed into roadways, railways brought goods to new markets, and telegraphs and newspapers brought news and ideas across vast distances (Reuther et al. 2004).

The development of the gold district in Nome in the early 1900s prompted a need for a transportation route to an ice-free port in the winter. In 1908, Walter Goodwin pioneered such a route. Completed in 1911, the route eventually became known as the Iditarod Trail and connected a point 50 miles (80 km) north of Seward, Alaska, where the Alaska Central Railway, a forerunner of the Alaska Railroad, ended, through Iditarod, Alaska and then to Nome. The trail was about 1,150 miles (1,850 km) long and followed traditional trails used by the Dena'ina and Yup'ik. The trail gained worldwide attention in the winter of 1925, when an outbreak of diphtheria struck Nome. Winter ice had closed the port city and there was insufficient serum to inoculate its residents. Serum from Anchorage was rushed by train to Nenana and picked up by

a sled dog relay. A relay of 20 sled dog teams carried the serum 674 miles (1,085 km) from Nenana to Nome in just over 127 hours.

By the mid-1930s, air transport replaced the sled dog team as the preferred way to ship mail and goods. Following the subsequent downturns in gold mining, the Iditarod Trail fell into disuse for close to 50 years, until the 1970s when Alaskans reopened the routes and created a sled dog race from Anchorage to Nome that followed portions of the historic Iditarod Trail route.

Mercury (quicksilver) mining provided another stable economic resource in the region for many years, as various cinnabar and mercury deposits in the Kuskokwim region were discovered and exploited along a roughly 250-mile line between Bethel and McGrath. Claims near Red Devil were staked in 1906, producing notable quantities of mercury over the next 18 years. In the 1950s, rising prices of mercury led to a resurgence in mercury mining; the Red Devil Mine continued to function as a major mercury producer into the early 1970s (Reuther et al. 2004).

3.20.2.2.3 THE RED DEVIL MINE – HISTORIC MINING LEGACY

The historic Red Devil Mine is well known to residents of the central Kuskokwim River villages, and remains an important legacy shaping the perceptions of residents about mining. Residents of Crooked Creek, during the January 2013 Scoping Meeting in their community, recommended an oral history project to learn more about the social impacts of this mine in its day, the so-called "boom and bust" cycle. A summary of interviews conducted in the summer of 2013 is provided below.

Commercial salmon fishing began on the Kuskokwim River in 1913 when Chinook salmon were first taken commercially. Small operations continued from 1916 through 1925. As was the case in many unregulated Alaska fisheries, over-fishing quickly took its toll and by 1926, legislation prohibited commercial fishing in the Kuskokwim River; though subsistence fishing and fishing to provide food for dog teams was still allowed. In the 1930s, legislation again changed to allow limited commercial fishing of Kuskokwim Chinook salmon for export by Alaska Native and permanent white residents. In the late 1950s, coinciding with Alaska statehood, commercial fishing along the lower Kuskokwim developed again. During the 1960s, lower Kuskokwim fisheries cooperatives provided a steadily increasing source of revenue (Reuther et al. 2004).

Other mid-twentieth century developments that affected the region included World War II military activities that produced the Alaska Territorial Guard and its successor, the Alaska National Guard. Pre-and post-war, Civil Aeronautics Authority and its successor the Federal Aviation Administration (FAA) increased regional transportation capabilities, particularly air transportation, and the Cold War defense build-up that stimulated the regional economy prior to statehood.

ORAL HISTORY OF THE RED DEVIL MINE BOOM AND BUST

Introduction

What happened to local communities during the Red Devil Mine period? How can those experiences help people to think ahead about the proposed Donlin Gold Project? These were questions raised in the Crooked Creek scoping meeting in January 2013. In response, an oral history and archival research project was initiated. Although historic mining technology and regulations differ greatly from today, local understandings of the social impacts of the Red Devil Mine provide important insights for future projects in the region.

Background

The Red Devil Mine produced cinnabar ore, a mercury containing ore, from 1938-1971 near a remote village located on the middle Kuskokwim River. The mine processed the ore on-site from 1938 until early 1969, after which ore was sent by barge down river to be processed in Japan. The mine produced many thousands of pounds of mercury using mining and processing methods common in that era. After closure, contaminated mine tailings created environmental problems due to runoff into the Kuskokwim River. Efforts to remediate the contaminated sites and to study impacts on fish have been underway since the late 1980s, under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund. This work is ongoing.

Social Impacts

The Red Devil Mine had substantial impacts on local communities, in population growth, income and employment, infrastructure, local traditions, and customary practices. In general, the positive impacts were economic – local citizens were able to obtain training for a job, allowing some to later go on to new employment elsewhere. But the negative impacts of mine operations were social, in rapid population growth, and associated social ills. When the mine abruptly closed, adverse impacts included loss of jobs and income, and for some families the need to relocate to find work. A few quotes below illustrate some of the good and bad effects of the mine:

Robert John was born in Crooked Creek, Alaska in 1944. During the time Red Devil was operational, both Robert and his father worked there. He stated, "*It was good wages, you know; I was just 16-17 years old. I was providing for me and my brother Jimmy…*" Moxie Alexie also remembered the positive impacts new income had on his brothers' lives. "*When people have jobs they are able to buy pretty nice stuff. During those years when my brothers worked at the mine, during that time they never went trapping. … I remember my brothers were able to buy new boats and motors, for hunting and fishing. Provide for their family.*"

The same people also remembered bad things about the mine. Robert John said "*From that mill they used to dump their water right into the Creek. From the mill on down, the water was greyish color. It drained out to the Kuskokwim River 24 hours a day, 7 days a week. …*" Moxie Alexie said "*If you were an Alaska Native back, then you didn't get paid very much. It was mostly labor work. Cleaning, working in the kitchen; miners helpers compared to the non- natives who were skilled workers*."

Positive Impacts

- Increase in personal income
- Increase in employment and income
- Economic growth and prosperity
- Better elementary and secondary education
- Improved subsistence activities with modern tools and technology
- Improvement in overall quality of life
- New community infrastructure

Negative Impacts

- Influx of outsiders to work
- Low education levels limited job access
- Lack of economic diversification and sustainable growth
- Increased burden to health and social services
- Challenges to tribal community cohesiveness, family relocations
- Long-term alteration to traditional culture and lifestyles
- Environmental contamination

Conclusions

The Red Devil Mine brought nearly 30 years of new employment and income opportunities to the Central Kuskokwim River villages. The mine increased the linkage of local Alaska Native residents to the cash economy, with all of its good and bad features. There was little planning for the day when the mine would close, and the abrupt closure resulted in major changes for those who remained in the region and for those forced to relocate to find work.

At this time, local villages had little voice in the business or governmental affairs of the region. With the Alaska Native lands claims movement and passage of the Alaska Native Settlement Claims Act by Congress in 1971, the Calista Corporation and later The Kuskokwim Corporation became important landowners and business leaders in the area.

Drawing lessons from the social outcomes of the Red Devil Mine, the region could anticipate that if the Donlin Gold Project proceeds, there could be new training and educational opportunities, employment, and income. The addition of small businesses started to support the project could extend the economic diversification. However, rapid growth is likely to increase some social ills, and it is important that communities have time to plan ahead to mitigate these impacts, perhaps through improved local government and social services. Socioeconomic and cultural settings have changed since the Red Devil mine operated. Communities may be more resilient in responding to change as there is more experience with integration of western culture; villages have laws banning alcohol; services are more available, and there are very different modern standards for company policies toward local hire, sustainability and cultural awareness.

3.20.2.2.4 PREVIOUS ARCHAEOLOGICAL RESEARCH

The earliest cultural resource research in the EIS Analysis Area was conducted in and near the village of Crooked Creek in 1930 by Aleš Hrdlička, who worked extensively for the Smithsonian Institution. During this period Hrdlička (1930) excavated one burial and noted an "old site" near Parent's Trading Post (SLT-064). In the early 1950s, Oswalt visited Crooked Creek while gathering data on tree-rings in the Kuskokwim drainage and noted a shallow, unconsolidated historic midden located in the middle of the village. In 1976, Alaska Division of Parks archaeologists Greg Dixon and Lloyd Jones surveyed the location for a proposed airstrip and three potential material sources near Crooked Creek and recorded several collapsed historic structures, referring to these as the "Middle Crooked Creek Remains." In 1982, Bureau of Indians Affairs (BIA) archaeologists inventoried cultural resources on Alaska Native allotments and townsites along the Kuskokwim River from Stony River to Chuathbaluk, recording 44 potentially significant sites along a 150-mile (240 km) stretch of the river (Kurtz 1983). Several sites within the vicinity of Crooked Creek recorded during the 1982 BIA survey include Crooked Creek Village (SLT-004), St. Nicholas Chapel (SLT-013), Vanderpool Fish Camp (SLT-026), Parent's Trading Post (SLT-064), and SLT-035 (Kurtz 1983).

In 1984, as part of a joint mapping project of the Iditarod Quadrangle by the Alaska Division of Geological and Geophysical Survey (DGGS) and the USGS, Robert Betts (1985) conducted an archaeological reconnaissance survey in the Kuskokwim Mountains region between Bonanza Creek and George River. Betts (1985) recorded three potential isolated finds and one definitive archaeological site, the Miller Ridge site (IDT-047).

In 1985, DGGS compiled historic and archaeological information for the Kuskokwim River Planning Area from literature, maps, and other primary and secondary source materials, as a part of a planning and management tool (Spartz 1985). The compilation provided a general overview of the resources within the Kuskokwim River Planning Area, which includes the vicinity of the mine site and Crooked Creek region.

In 1993, Michael Yarborough (1993) conducted a survey in the village of Crooked Creek. No definitive cultural materials were identified, though Yarborough did collect valuable oral historic information pertaining to Parent's Trading Post (SLT-064) located in the vicinity of the middle village.

Since 2004, archaeological investigations have been conducted in association with the proposed development. These investigations, discussed below, have targeted the identification of cultural resources in the proposed mine area, as well as along the proposed transportation and pipeline corridors.

3.20.2.3 MINE SITE

Archaeological investigations for the mine site began in 2004. The study was initiated with a records search and literature review, which revealed that 23 known AHRS sites had been recorded within a 15-mile radius of the proposed mine site (Table 3.20-1). These sites include two historic cabins, one mine, three village sites, one chapel, nine fish camps, five camping areas, and a trading post. None of these sites are located directly within the maximum geographic area of potential effects to cultural resources, i.e. the project's APE (Reuther et al. 2004). In addition, the Bureau of Indian Affairs (BIA) and Association of Village Council Presidents (AVCP) were contacted for information regarding historic sites located on Native

Allotments and 14(h)1 historic sites and cemetery lands selected under the Alaska Native Claims Settlement Act (ANSCA) (Reuther et al. 2004).

Archaeological survey was conducted within the Donlin Gold Mine lease boundary APE, proposed Angyaruaq (Jungjuk) dock site, proposed gravel source sites, and four alternative airstrips in 2004. Low altitude helicopter overflight was used to examine 28,690 acres; 3,381 acres were subject to pedestrian survey and high potential subsurface testing. A majority of the terrain within the Donlin Gold Mine lease boundary consists of steep ridge side slopes and low lying valley floors; black spruce, alder, dwarf and paper birch, and larch are the dominant plant types along the hillsides, while muskeg vegetation, underlain by permafrost, is present in the valley bottoms near drainages. Steep hillsides and low lying black spruce and muskeg environments were considered to have a low potential for the presence of archaeological sites and were surveyed by helicopter; ridgetops with gentle and relatively flat slopes were considered areas of high potential for the presence of archaeological sites. Thirty-five such high potential areas were identified within the project APE.

Seven cultural resources were discovered during the 2004 survey for the Donlin Gold Project area, six of which are situated within the Donlin Gold Mine lease boundary. These sites consist of one historic cabin (IDT-260), possibly associated with a historic trail; the location of two collapsed structures (IDT-261); a large lithic flake scatter (IDT-262); two small lithic scatters (IDT-263 and -264); and two historic ditches (IDT-265 and -266), measuring 2 to 2.5 miles in length that were associated with mining. Phase II evaluations of these resources were conducted in 2010 and resulted in recommendations of non-eligibility for all but two of these sites; IDT-260 was recommended as eligible for nomination to the NRHP, while the eligibility of IDT-261 remained undetermined (Hays et al. 2011).

Additional survey was conducted in the mine area in 2011, to address expansion of the proposed mine lease boundary. Thirty moderate to high probability landforms were tested during this effort. One additional archaeological site (IDT-292), a prehistoric lithic scatter, was identified during this effort (Hays et al. 2012) and is unevaluated for NRHP eligibility.

3.20.2.4 TRANSPORTATION FACILITIES

Archaeological research specific to the transportation facilities was initiated in early 2006 with winter archaeological monitoring of initial project geotechnical testing along portions of the Angyaruaq (Jungjuk) mine access road route. Archaeologists inspected 28 geotechnical pits dug along portions of the route from roughly the Donlin camp to Juninggulra Mountain but did not identify any cultural resources (Wooley et al. 2007). Later that year, a second season of cultural resource field surveys was conducted for the Donlin Gold Project Area (Wooley et al. 2007). The proposed development activities surveyed in 2006 included: (1) the proposed Angyaruaq (Jungjuk) road ROW extending approximately 28.5 miles south from the Donlin Gold camp to the Kuskokwim River; (2) 15 potential material sites (MS1 through MS15) that encompassed approximately 352 acres along the road route; (3) a proposed airstrip near Return Creek and access road connecting it to the Angyaruaq (Jungjuk) road route; and (4) a proposed dock site (250 acres) along the north bank of the Kuskokwim River just north of the confluence of Jungjuk Creek. One prehistoric site (SLT-094) was identified during the 2006 field survey (Table 3.20-1).

In early 2007, a proposed alternative dock site location (referred to as Birch Tree Crossing Port and analyzed in Alternative 4) was identified along the northern bank of the Kuskokwim River,

approximately 12 miles west of Aniak. This alternative requires a longer road than the initial proposed road to the mouth of Jungjuk Creek. In addition, a proposed limestone source was being explored at the crossing site. Because AHRS site RUS-091 had been reported nearby and two Native allotments were located upstream (at George One's Creek) and downstream (at Old Mary's Bar) of the location, a thorough archaeological assessment of the area was conducted.

Access to the Birch Tree Crossing Port involves construction of an approximately 75-mile long road corridor, traversing the upland hills from the Donlin Gold camp to the port site. Fifty material sites associated with the proposed road and port site construction were also identified for development (See Section 2.3.5 Birch Tree Crossing Port). In addition, several locations were considered at the time for establishing wind farm sites where wind turbines could provide a potential alternative source of energy to the Donlin Gold camp. Archaeological survey of these project components is documented in Wooley et al. (2008). The total area surveyed was approximately 5,234 acres; 1,717 acres were subject to pedestrian survey and subsurface testing of high probability areas, with the remainder subject to low-level helicopter reconnaissance. A total of 21 high potential areas were tested for buried cultural remains with a total of 89 tests pits placed within these areas. Four previously undocumented cultural resource sites (RUS-111, RUS-112, RUS-113, and RUS-114) were recorded in the 2007 survey; only RUS-112 lies within the material site APE boundaries. All four sites consist of sparse lithic scatters. Two of the sites were recommended as eligible (RUS-112 and RUS-114) for information potential regarding prehistory of Alaska, while one site was recommended as ineligible (RUS-111). Site RUS-113 was not evaluated because it was over 500 feet from the APE boundary (Wooley et al. 2008).

Although no longer part of the proposed project or alternatives, a proposed Crooked Creek road ROW and four associated material sites were surveyed in 2008. The corridor extends 10.7 miles east from the proposed Angyaruaq (Jungjuk) road corridor to the lower village of Crooked Creek along the Kuskokwim River. A material site and associated access road connecting it to the Angyaruaq (Jungjuk) road corridor were also surveyed near the Montana Creek airstrip. Also during the 2008 survey work, four areas within the mine lease boundary identified during the 2004 field season as high in potential for cultural materials were tested to provide a more complete set of data on the EIS Analysis Area. No cultural resources were identified during the 2008 survey (Proue et al. 2009).

3.20.2.5 PIPELINE

Surveys conducted for the pipeline have been guided by an archaeological model developed for the project in 2010 (Reuther et al. 2010). The site location model and survey approach were based on use of GIS techniques to identify patterns of known site locations in subarctic Alaska, using environmental variables to project site location potential. The objective of the model was to provide efficient survey and testing coverage of the pipeline APE meeting professional standards and legal regulations for this large-scale project. The site location model was used to divide the APE into survey zones with differential potential for site discovery due to the heterogeneous and variable nature of Alaskan prehistoric, protohistoric, and pre-Gold Rush Era sites; more recent Gold Rush and Post-Gold Rush Era Sites (1880 to 1960 A.D.) were not included in the model because there is much more reliance on archival research and a high degree of surface visibility associated with these types of sites (Reuther et al. 2010). In zones with a lower potential for site discovery, helicopter-based (Type A) survey was used, while zones with a higher potential, intensive ground (Type B) survey methods were employed.

About 43 percent of the proposed alignments were designated as Type A (helicopter) survey, while 57 percent were designated as Type B (ground survey).

As with the mine site and transportation infrastructure project components, limited archaeological investigations were initiated in the early twentieth century, with more recent studies conducted largely in conjunction with the proposed Donlin Gold Project. One exception to this is a number of studies conducted in association with the Iditarod National Historic Trail, the early twentieth century route between Girdwood, on Turnagain Arm, and the mining community of Nome.

Records search and literature review efforts conducted prior to initiating pipeline corridor studies for the proposed project resulted in the identification of 50 sites within a 5-mile radius of the pipeline corridor (Table 3.20-1). The majority (41) are historic sites including collapsed cabins and structures, mining-related ditch features, roadhouses, a Russian village, a Civilian Conservation Corps cabin, and modern camps/resource use areas including buildings and features associated with FAA Air Navigation Facilities ca. 1940-1958. Most of historic sites (31) are associated with either the Iditarod National Historic Trail or FAA activities. There are also 8 prehistoric sites consisting mainly of lithic scatters, a few isolated tools, and one cave occupation. There is one site thought to be protohistoric, likely occupied prior to the arrival of Russians (Reuther et al. 2011). In addition to the 50 sites, the records search indicates seven potential resources could be present that are not recorded in the AHRS system; these are recent and/or historic era sites such as roadhouses/cabins, undefined use areas, and a telephone line that are shown on historic maps but not identified during field studies (Reuther et al. 2011). Some of these resources, if present, may be associated with the Iditarod National Historic Trail.

The original pipeline corridor, surveyed in 2010, extended approximately 312.7 miles from Beluga on Cook Inlet to the planned mine site in the middle Kuskokwim Region in southwest Alaska. The draft APE for the pipeline is considered to be a 300-foot wide corridor, 150 feet on each side of the proposed gas pipeline centerline. While the APE is considered to be 300 feet wide, a greater area was surveyed for cultural resources. Surveys were conducted within 500 feet of the proposed pipeline corridor, 250 feet on each side of the proposed pipeline alignment.

A Phase I Identification survey of the proposed pipeline corridor began in 2010; surveys of subsequent revisions to the route were completed during the 2012 field season. In total, the helicopter-based aerial survey covered approximately 130 miles (4,705 acres), while the ground survey covered approximately 183 miles (6,662 acres). A total of 375 high potential landforms identified during the pedestrian and aerial surveys have been tested (Reuther et al. 2011). Survey and research efforts conducted in 2010 identified 35 cultural resources: 23 newly discovered sites and 12 previously known sites (Reuther et al. 2011). Also in 2010, the field evaluation and historic context data gathering process began for historic-period resources located within the proposed alignment.

In 2011, field investigations included additional survey and testing along a revised pipeline alignment between May and August of 2011 (Reuther et al. 2012). The total length of the revised pipeline route at that time was 312.7 miles (11,404 acres). In 2011, the Phase I Identification survey was completed along 18.6 miles (676 acres) of alignment deviations between previous and current revisions; 8.8 miles (320 acres) were covered by aerial survey and 9.8 miles (356 acres) by pedestrian methods. Phase I Identification testing was completed at 220 high potential landforms in 2011, with 20 new cultural resources identified during that field season (Reuther et al. 2012). Eight potentially affected areas adjacent to or within the alignment were also assessed

and surveyed in 2011 (Reuther et al. 2012). These areas included locations where geotechnical activities such as borehole drilling are ongoing and where proposed directional drilling workspaces are planned.

A 2012 field program was undertaken to complete Phase I Identification testing at 13 remaining test areas within the revised pipeline corridor; and to complete the Phase II Evaluation field documentation of the known cultural resources that are situated within 500 feet of the proposed corridor, or 250 feet on each side of the proposed pipeline alignment. In total, 52 prehistoric and historic cultural resources were identified as a result of the 2010 to 2012 field investigations along the pipeline corridors (Reuther et al. 2011, 2012). Fourteen cultural resources (11 prehistoric sites and 3 historic sites) located within approximately 500 feet of the proposed pipeline centerline were recommended as eligible to the NRHP. The remaining resources within 500 feet of the pipeline centerline were recommended as not eligible to the NRHP because they either do not meet the necessary requirements of being 50 years of age of older to be eligible, or do not possess the potential to yield any important data beyond what was gathered during the project's field seasons.

Additional survey and evaluation was also conducted in 2013 to address the proposed realignment pipeline corridor segment, associated with the current 315-mile proposed pipeline corridors. Ten additional prehistoric sites were identified, documented, and evaluated as a result of the new alignments (Rogers et al. 2013).

Nine recent use sites were also identified, and include vehicular, sled or pedestrian trails, trap line corridors, aircraft wreckage, culturally modified tree areas, fire pits, hunting stands, and other resources that are less than 50 years old. These non-historic site resources were documented so that if one was encountered during construction managers would know that they were previously assessed during the permitting stage (Rogers et al. 2013:16). However, the recent use sites are not eligible for the NRHP because they do not meet the minimum age requirement and are not considered further.

3.20.2.6 SUMMARY OF IDENTIFIED RESOURCES WITHIN THE APE

The APE was found to contain 41 identified cultural resources (Table 3.20-1), inclusive of the INHT. Ten of the 41 sites within the APE are recommended as eligible for the NRHP; these sites are considered to be eligible for the purposes of analysis. The 10 sites include the Lewis Gulch Cabin ruins (IDT-00260), a prehistoric occupation at the Angyaruaq site (SLT-00094), a prehistoric animal bone scatter (TYO-00279), and 7 prehistoric lithic scatters (IDT-00275, IDT-00288, MCG-00060, MCG-00071, RUS-00112, TAL-00166, TYO-00278). The Lewis Gulch Cabin ruins (IDT-00260) consist of a miner's cabin, with associated pit features, a prospect hole, and a refuse dump dating to ca. 1910. The Lewis Gulch Cabin, found at the Mine Site along Crooked Creek, is recommended as eligible for the NRHP under Criterion D for its potential to provide archaeological data on the history of mining and prospecting in the Middle Kuskokwim region during the early period of prospecting from 1910 to 1915 (Hays et al. 2011). The prehistoric Angyaruaq site (SLT-00094) is near the Kuskokwim River and was identified during survey of the Angyaruaq (Jungjuk) Port component. The site includes several housepits and tools, with radiocarbon dates revealing multiple occupations dating to about 2,000 years ago. The intact, buried site with *in situ* artifacts present in association with dated cultural materials is recommended as eligible to the NRHP because of its potential to yield information pertaining to prehistoric subsistence and settlement patterns in Southwest Alaska (Wooley et al. 2007). The

prehistoric animal bone scatter designated as TYO-00279 is on a terrace at the confluence of the Happy River and Skwentna River and consists of calcined bones (faunal materials) associated with a buried soil but no artifacts, dating to about 4200 BP. The site, identified along the pipeline route, is recommended as eligible to the NRHP for its ability to provide archaeological data on the human prehistory of the Alaska Range and routes between southern Alaska's largest drainages (Reuther et al. 2013).

The seven prehistoric lithic scatters (IDT-00275, IDT-00288, MCG-00060, MCG-00071, RUS-00112, TAL-00166, TYO-00278) vary in constituents but are each recommended as eligible to the NRHP under Criterion D because of their ability to address important research questions. Prehistoric lithic scatters IDT-00275 and IDT-00288 are found in the same pipeline segment and both exhibit a wide range of lithic materials and large variation in activities, with artifact assemblages comprised of both local and exotic lithic materials. Both sites are recommended as eligible to the NRHP for their potential to yield data on the cultural history and land use patterns of the middle Kuskokwim region and western Alaska. Similarly, prehistoric site MCG-0060 is along the pipeline alignment on a terrace near the Tatina River and consists of buried lithic artifacts, a hearth feature dated ca. 4500 calibrated BP, and surface depressions. The site is recommended as eligible to the NRHP for its ability to provide archaeological data on the human prehistory of the Alaska Range, the upper Kuskokwim region, and western Alaska (Reuther et al. 2013). Prehistoric site MCG-00071 is located near the Tatina River along the pipeline and consists of lithic artifacts, calcined bone fragments, and a charcoal/hearth feature. The site dates to ca. 4300 BP and is recommended as eligible to the NRHP for its ability to yield data regarding land use patterns, exchange networks, and the nature of utilization at the site (Rogers et al. 2013). Site RUS-00112 is found on a moraine of the Russian Mountains at a port project component and consists of a small quantity of lithic artifacts in distinct surface concentrations and is recommended as eligible for the NRHP based on potential to provide information about lithic material procurement and expedient technology in the Middle Kuskokwim region (Wooley et al. 2008). Prehistoric site TAL-00166 is along Indian Creek and consists of buried Batza Tena-source obsidian artifacts lying above a layer of tephra. The site, found along the pipeline, is recommended as eligible to the NRHP under Criterion D for its ability to provide data on the human history of the Alaska Range, the upper Kuskokwim region, and western Alaska (Reuther et al. 2013). Site TYO-00278, found at the confluence of the Happy and Skwentna Rivers, consists of charcoal and cultural materials in buried soils representing three cultural components spanning ca. 4000 to 7000 BP. The site, found along the pipeline, is recommended as eligible to the NRHP under Criterion D for its ability to provide data on the human history of the Alaska Range, the upper Kuskokwim region, and western Alaska (Reuther et al. 2013).

Three sites are unevaluated, but assumed to be eligible for the NRHP for the purposes of this analysis. The unevaluated sites include recent-historic cabin ruins (IDT-00261) of indeterminate age, a prehistoric lithic scatter (IDT-00292), and a reported but unconfirmed village location (RUS-00091). Because the age of the cabin is unknown, site IDT-00261 has not been fully evaluated for the NRHP. The prehistoric lithic scatter (IDT-00292) was identified at the mine project component but has not been evaluated. The site consists of a small flake scatter of culturally–modified basalt (Hays et al. 2012). The Avaucharak village location is identified as AHRS site RUS-00091. A field survey was conducted in the reported area, but the site was unable to be relocated. While remaining unevaluated, the site is considered eligible for the purposes of this analysis.

The remaining cultural resources in the APE are recommended as not eligible to the NRHP because they do not possess the potential to yield any important data beyond what was gathered during the project's field seasons. For example, numerous prehistoric sites (e.g., IDT-00276, IDT-00277, IDT-00278, IDT-00279, IDT-00280, IDT-00281, IDT-00283, IDT-00287, IDT-00288, IDT-00289, IDT-00290, and IDT-00291) are areas of expedient stone tool production and maintenance on ridge tops where lithic raw materials were readily available and artifact density is low. These sites lack a potential to yield important information reading cultural and land use history of the region beyond what was gathered during the project (Reuther et al. 2013).

The two historic and/or recent placer mining features (IDT-00265 and -00266) extend for 2 to 2.5 miles and may date between 1909 and the 1970s. These have been recommended as ineligible for the NRHP because they lack ability to yield important archaeological or historical data, and because better-preserved water diversion structures are present elsewhere (Hays et al. 2011). Of note is that the Happy River Roadhouse site (TYO-00023) is no longer present within the APE and is not considered further. The previously documented site no longer exists due to natural causes, or flooding by the adjacent river.

Final determinations of eligibility will involve consultation among the Section 106 consulting parties and will include the considerations of Alaska Native Tribes and other parties; procedures for formal determinations will be addressed in the PA for cultural resources.

The INHT is Congressionally-designated and the trail system is considered eligible for nomination to the NRHP, but the specific segments that intersect the APE are not reflected in the AHRS and therefore do not have site numbers in Table 3.20-1. Final NRHP eligibility will involve consultation among the Section 106 consulting parties, and details regarding this will be addressed in the PA. The INHT is discussed in more detail in Section 3.20.2.6.1.

Table 3.20-1: Cultural Resources within the Donlin Gold Project Proposed APE

Number	Type	Recommendation for NRHP Eligibility	Criteria for Eligibility/ Comments	Project Component
IDT-00260	Lewis Gulch Cabin ruins (ca. 1910s)	Eligible	Criterion D (information potential re: history of mining in Alaska)	Mine Site
IDT-00261	Cabin ruins (ca. 1950s to 1980s?)	Unevaluated	Additional data (year of construction) needed to fully evaluate under Criterion D	Mine Site
IDT-00262	Prehistoric lithic scatter	Not Eligible	N/A	Mine Site
IDT-00263	Prehistoric lithic scatter	Not Eligible	N/A	Mine Site
IDT-00264	Prehistoric lithic scatter	Not Eligible	N/A	Mine Site
IDT-00265	Snow-Gulch to Ruby Gulch ditch	Not Eligible	N/A	Mine Site
IDT-00266	Dome Creek to Quartz Creek ditch	Not Eligible	N/A	Mine Site
IDT-00275	Prehistoric lithic scatter	Eligible	Criterion D (information potential re: prehistory of Alaska Range)	Pipeline Alts. 2 and 6A

Table 3.20-1: Cultural Resources within the Donlin Gold Project Proposed APE

Number	Type	Recommendation for NRHP Eligibility	Criteria for Eligibility/ Comments	Project Component
IDT-00276	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alts. 2 and 6A
IDT-00277	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alts. 2 and 6A
IDT-00278	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alts. 2 and 6A
IDT-00279	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alts. 2 and 6A
IDT-00280	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alts. 2 and 6A
IDT-00283	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alts. 2 and 6A
IDT-00286	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alts. 2 and 6A
IDT-00287	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alts. 2 and 6A
IDT-00288	Prehistoric lithic scatter	Eligible	Criterion D (information potential re: prehistory of Alaska Range)	Pipeline Alts. 2 and 6A
IDT-00289	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alts. 2 and 6A
IDT-00291	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alts. 2 and 6A
IDT-00292	Prehistoric lithic scatter	Unevaluated	Additional data needed to fully evaluate under Criterion D	Mine Site
MCG-00060	Prehistoric lithic scatter	Eligible	Criterion D (information potential re: prehistory of Alaska Range)	Pipeline Alt. 6A (Dalzell)
MCG-00061	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alt. 6A (Dalzell)
MCG-00071	Prehistoric lithic scatter	Eligible	Criterion D (information potential re: prehistory of Alaska Range)	Pipeline Alt. 2 (Proposed)
MCG-00073	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alt. 2 (Proposed)
MCG-00077	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alt. 2 (Proposed)
RUS-00091	"Avaucharak" reported village location	Unevaluated	Unable to relocate/field verify site; Additional data needed to fully evaluate under Criterion D	Alt 4. BTC Port Facility
RUS-00112	Prehistoric lithic scatter	Eligible	Criterion D (information potential re: prehistory of Alaska Range)	Alt 4. BTC Material Site
SLT-00094	Prehistoric occupation (Angyaruaq Site)	Eligible	Criterion D (information potential re: prehistory of Southwest Alaska)	Mine Port Facility

Table 3.20-1: Cultural Resources within the Donlin Gold Project Proposed APE

Number	Type	Recommendation for NRHP Eligibility	Criteria for Eligibility/ Comments	Project Component
TAL-00151	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alts. 2 and 6A
TAL-00152	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alts. 2 and 6A
TAL-00153	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alts. 2 and 6A
TAL-00163	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alts. 2 and 6A
TAL-00165	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alts. 2 and 6A
TAL-00166	Prehistoric lithic scatter	Eligible	Criterion D (information potential re: prehistory of Alaska Range)	Pipeline Alts. 2 and 6A
TAL-00177	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alt. 2 (Proposed)
TAL-00178	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alt. 2 (Proposed)
TYO-00023	Happy River Roadhouse ruins	N/A	Site no longer exists due to natural causes	Pipeline Alts. 2 and 6A
TYO-00278	Prehistoric lithic scatter	Eligible	Criterion D (archaeological information potential re: prehistory of Kuskokwim region)	Pipeline Alts. 2 and 6A
TYO-00279	Prehistoric animal bone scatter	Eligible	Criterion D (information potential re: prehistory of Alaska Range)	Pipeline Alts. 2 and 6A
TYO-00307	Prehistoric lithic scatter	Not Eligible	N/A	Pipeline Alts. 2 and 6A
INHT	National Historic Trail	Eligible	N/A	Pipeline Alts. 2 and 6A

Notes:

1 These are recommendations and have not been formally determined by the reviewing agencies.
2 IDT-00282, 00284, and 00285 were determined to be non-cultural upon further evaluation and are not included within this table.
Site Type Tally: 35 prehistoric archaeological sites, 6 historic archaeological sites (including INHT).

Source: Hays et al. 2011, 2012; Reuther et al. 2004; 2013; Wooley et al. 2007, 2008.

3.20.2.6.1 IDITAROD NATIONAL HISTORIC TRAIL

Nature and Purpose

As noted above, by the mid-1930s, air transport replaced the sled dog team as the preferred way to ship mail and the Iditarod Trail fell into disuse for close to 50 years. In the 1970s Alaskans reopened the routes and created a sled dog race from Anchorage to Nome that followed portions of the historic Iditarod Trail route. The Iditarod Trail Sled Dog Race ultimately revived

dog mushing in Alaska and around the world, and after a lengthy effort, the Iditarod was designated as a National Historic Trail in 1978. National Historic Trails commemorate major routes of exploration, migration, trade, communications, and military across America. Only 19 trails have been honored as National Historic Trails to date, and the Iditarod is the only Alaskan trail in the National Historic Trail System (BLM 1986a). The INHT commemorates the winter trail, the use of sled dogs for conveyance, and the unique natural setting associated with the Iditarod gold rush, which was the last great gold rush in America. Major portions of the INHT retain excellent integrity of feeling, setting, location, and association.

Primary Uses

Portions of the INHT historic route overlap the current race route at various points along the trail. Primary uses of these portions of INHT include recreation and tourism. Use is high during winter months when the trail is used for Iditarod Trail Sled Dog Race, the Northern Lights 300, the Knik 200, the Junior Iditarod Sled Dog Race, the Iron Dog snowmachine race, and the Iditarod Invitational (Nordic skiers, mountain bikers, snowshoers, and runners). Those segments of the INHT not located along the race route are not actively maintained but may receive subsistence use and local winter travel.

Character Defining Features and Integrity

The Iditarod National Historic Trail Comprehensive Management Plan describes "visual and perceptual" aspects of the INHT by identifying visually significant segments according to criteria relating to the degree of naturalness (BLM 1982). Visually significant segments were identified by classifying trail segments by physiographic region, and then subdividing those segments into discrete Scenic Quality Rating Units (SQRUs) based on physiographic integrity and shared scenic quality attributes (see Section 3.17, Visual Resources, for a description of physiographic regions). Scenic quality was assessed in each SQRU by ranking seven key factors: landform, vegetation, water, color, influence of adjacent scenery, scarcity, and cultural modification. Resulting scenic quality classes are defines as follows (BLM 1982):

- Class A: Areas that "combine the most outstanding characteristics of each rating factor";
- Class B: Areas in which there is a combination of some outstanding features and some that are fairly common to the physiographic region; and,
- Class C: Areas in which the features are fairly common to the physiographic region.

In addition to ranking scenic quality, this inventory also identifies view areas, Significant Viewpoints, and Important Landmark Features that contribute to the character of each SQRU segment. Significant Viewpoints are identified at the Happy River/Skwentna River confluence, Rainy Pass, Dalzell Gorge, and Rohn Roadhouse. Important Landmark Features are identified at Kohlsaat Peak north of the Rainy Pass Lodge, Pyramid Mountain, Mount Susitna and Beluga Mountain (BLM 1982).

The proposed operational ROW crosses 8 SQRUs located within the Alaska Range and Susitna Lowlands physiographic provinces. Character-defining features and integrity are described below and summarized in Table 3.20-2. The text presents SQRUs in north to south order.

SQRU AR-06 is located in the northern portion of the Alaska Range. Scenic quality within this unit was ranked as Class A. Dominant scenic attributes of this unit are the distinct change in

setting as views from the expansive, rugged, and incised Alaska Range transitions to the broad, flat, and panoramic qualities of the Tanana-Kuskokwim Lowlands. Scenic quality attributes are experienced in a directional manner, as this trail segment, approximately 5 miles in length, heads northward across the lowland. Two scenic resources are identified in the INHT CMP (BLM, 1982): (1) Egypt Mountain, identified as an important landmark feature, and (2) the valley walls of the Alaska Range, identified as a view area. The proposed ROW would cross this unit once at the southern portion of the unit, as the trail emerges from the Alaska Range and enters the Tanana-Kuskokwim Lowlands.

SQRU AR-2 is located in the Happy River Valley, south of Kohlsaat Peak, and Rainy Pass Creek south of Rainy Pass. Scenic quality is ranked as Class A. Dominant visual elements in this segment include the expansive, uninterrupted views from the trail due to lack of vegetation along the trail. The rugged landforms to the east of Pass Creek are identified as an important landmark feature, and the valley walls of the Alaska Range are identified as a view area (BLM 1982).

SQRU AR-1 is located in the Happy River Valley between Destin Peak and Puntilla Mountain. Scenic quality is ranked as Class A. This unit includes dominant visual elements of steep jagged mountains of the Alaska Range, and the expansive views and vistas where the INHT crosses higher elevation terraces. The valley walls of the Alaska Range are identified as a view area (BLM 1982).

SQRU SL-08 is located south of McDoel and Columbia peaks and extending from approximately Finger Lake to the Happy River. Dominant visual attributes include the Happy River to the south, terraced landforms of upland areas, and the edge-break provided by both vegetation and landform in the southern portion of the unit. Scenic quality is ranked as Class A. The unit is described as a "well-defined visual corridor directed toward the pass, with mountains providing continuous visual landmarks on either side" (BLM 1982). The confluence of the Happy and Skwentna River is identified as a significant viewpoint, and surrounding higher elevation valley walls are identified as view areas (BLM 1982).

SQRU SL-07 is located north of the Skwentna River, extending from roughly the confluence with the Talachulitna River to south of McDoel Peak, and is typical of the foothills of the Alaska Range. Though several lakes (Shell Lake, Onestone Lake) are within a mile of the trail, these features are seldom seen due to the spruce-poplar and lowland/upland spruce-hardwood forests. Dickason Mountain, located to the southwest, is identified as a view area, particularly the Shell Hills to the north. Scenic quality is ranked as Class B.

SQRU SL-06 is located at the intersection of the INHT and the Skwentna River. Similar to the Susitna River crossing, the intersection of the INHT and the Skwentna River provides "significant relief from the vast homogenous forests of the Susitna Lowlands" (BLM, 1982). Scenic quality is ranked as Class A. No important landmark features or significant viewpoints are identified in the INHT CMP (BLM 1982).

SQRU SL-05 is located in the Upper Matanuska Valley physiographic province east of Mount Susitna and Beluga Mountain, and is homogenous with little visual interest or diversity. Scenic quality was ranked as Class C. Beluga Mountain is identified as both a viewing area and an important landmark feature (BLM 1982). Cultural modification was identified as a contributing factor to the reduction of scenic quality in this unit. Though located outside this SQRU, both

Mount Susitna and Beluga Mountain and their foothills are identified as important landmark features (BLM 1982).

SQRU SL-04 is located in the Upper Matanuska Valley physiographic province, east of Mount Susitna where the trail crosses the Susitna River, where scenic quality attributes contribute most to the setting. These include the openness of views experienced in this segment compared to surrounding areas where viewer extent is limited by forest. Though located outside of this unit, Mount Susitna and its foothills are identified as both a view area and an important landmark feature (BLM, 1982). Scenic quality is ranked as Class A.

Table 3.20-2: Summary of Scenic Quality and Character-Defining Features of the Iditarod National Historic Trail by Scenic Quality Rating Unit

SQRU	Physiographic Unit	Scenic Quality Rating	View Areas	Significant Viewpoints	Important Landmark Features
AR-6	Alaska Range	A	Valley walls of Alaska Range	N/A	Egypt Mountain
AR-2	Alaska Range	A	Valley walls of Alaska Range	N/A	Rugged landforms to the east of Pass Creek
AR-1	Alaska Range	A	Valley walls of Alaska Range	N/A	N/A
SL-08	Susitna Lowlands	A	Valley walls of Alaska Range	The confluence of the Happy and Skwentna River	N/A
SL-07	Susitna Lowlands	B	Dickason Mountain	N/A	N/A
SL-06	Susitna Lowlands	A	N/A	N/A	N/A
SL-05	Susitna Lowlands	C	Mount Susitna and Beluga Mountain and foothills	N/A	N/A
SL-04	Susitna Lowlands	A	Mount Susitna and foothills	N/A	N/A

Source: The Iditarod National Historic Trail Comprehensive Management Plan (BLM 1982).

3.20.2.6.2 TRADITIONAL CULTURAL PROPERTIES

A Traditional Cultural property (TCP) is defined as a place that is “eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community’s history, and (b) are important in maintaining the continuing cultural identity of the community” (Parker and King 1992). TCPs often represent the location where important traditional events, activities, or cultural observances have taken place in the past, yet remain active in the community's or tribe’s cultural practices. An ethnographic study involving the affected tribes can assist in properly identifying and evaluating the significance of TCPs. Confidential results of the ethnographic study would then be shared with the lead agencies and may or may not be distributed as public information.

As discussed above, the history of the region is characterized by intensive use and occupation by the Dena'ina and Yup'ik peoples, including residential and camp locations, subsistence resources, origin locations, place names, and travel routes. Data on these locations are contained in a variety of sources, including published and unpublished historic accounts, oral traditions, and recorded interviews, but have not been compiled into a comprehensive document as part of the current proposed undertaking.

Further development of the PA and Section 106 consultations with affected tribes may result in additional documentation of TCPs in the future.

3.20.2.6.3 CLIMATE CHANGE

Climate change may induce or hasten permafrost degradation, land subsidence, and riverine and coastal erosion. Cultural resources and historic properties have been affected by climate change to the extent that these related physical processes are in the vicinity of cultural resources and historic properties. A recent article in a publication of the Archaeological Institute of America focused on an archaeological site in Quinhagak where the remains of an historic Yup'ik settlement is threatened by climate change induced erosion (Weiss 2015). Other cultural resources and historic sites, including Alaska Native village sites, are also at risk of riverine and coastal erosion processes accelerated by climate change (Demer 2014). The Quinhagak site and other archaeological sites may supplement climate change studies and adaptation measures by providing an understanding of human responses to past climate changes (University of Aberdeen 2012).

3.20.3 ENVIRONMENTAL CONSEQUENCES

The construction, operations and maintenance, and closure of the project could potentially result in both direct and indirect effects to cultural resources. This section summarizes anticipated impacts to cultural resources based on the proposed alternatives as analyzed under NEPA, NHPA, and NTSA regulations. NEPA and NHPA criteria are relevant for all cultural resources. The NTSA is relevant only for the INHT within the EIS Analysis Area.

3.20.3.1 AREA OF POTENTIAL EFFECT FOR IMPACTS ANALYSIS

As discussed in Section 3.20.1, the classification of a "cultural resource" for purposes of this EIS includes all buildings, sites, districts, structures, objects and landscapes that have been created by or are associated with humans and are considered to have historical or cultural value. This definition is broad and can include cultural landscapes, TCPs, and resources of spiritual or other importance to tribes, for example. Cultural resources as defined herein also include, but are not limited to, "historic properties" as they are more narrowly defined under the NHPA.

The APE for cultural resources is defined in the Section 106 regulations as: "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking" (36 CFR 800.16[d]). Donlin Gold, in consultation with the Corps and the SHPO, has proposed an APE as detailed in Section 3.20.1. The APE includes buffered core mine operations area and ancillary facilities (Mine Site and Transportation Facilities), and the

pipeline, which includes a 300-foot wide planning ROW plus buffered ancillary facilities such as roads and transmission lines (Figure 3.20-1).

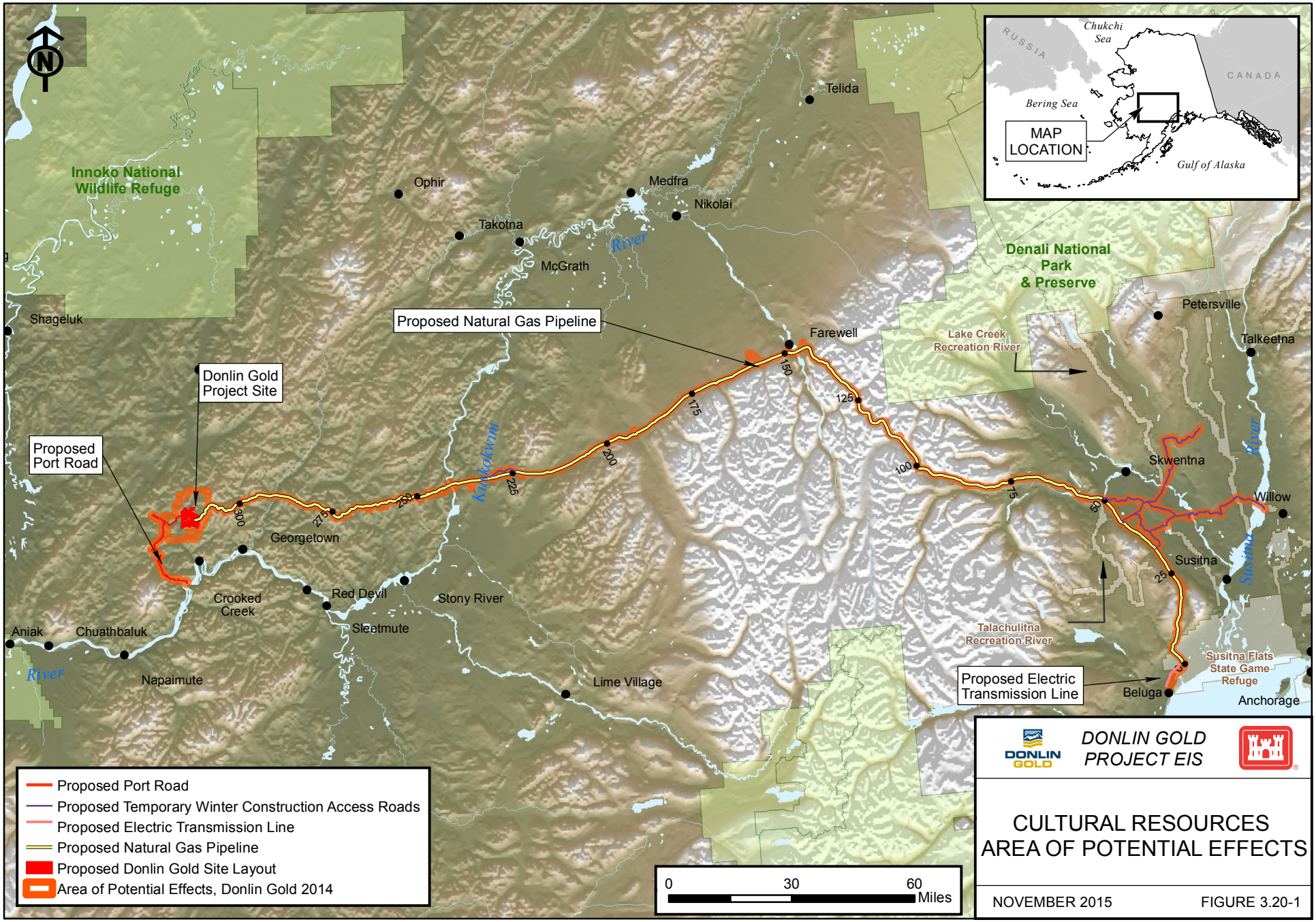
The following sections discuss cultural resources identified within the APE as currently defined. Consultation is ongoing and the APE may be adjusted in the future as a result of consultation under NEPA and NHPA with interested parties, Alaska Native tribes, local governments, and state and federal agencies. Specifically, the proposed APE may be refined in conjunction with a visual assessment currently in progress regarding indirect effects to additional portions of the INHT.

3.20.3.1.1 ANALYSIS OF IMPACTS UNDER NEPA

For cultural resources, direct effects typically occur as ground disturbance during construction activities and the impacts are permanent. For this analysis, direct impacts to cultural resources would likely occur within the project APE (i.e., 300-foot wide pipeline corridor, mine site, and port area) during the construction phase. The operations and maintenance, and closure of facilities would result in minimal new ground disturbance, with less of a chance for subsequent direct impacts.

For cultural resources, typically indirect effects occur through increased use or visual effects on resources that are valued for their context, setting, association, or similar aspects of integrity. Historic trails, for example, may have settings that contribute to their historical significance, and alterations to the viewshed may indirectly impact these resources.

The level of impacts on cultural resources will be based on levels of intensity, duration, geographic extent, and context, as shown in Table 3.20-3. Although under NEPA, effect is not limited to NRHP-eligible historic properties (as defined by the NHPA Section 106 process), information on NRHP eligibility helps develop an understanding of intensity of an effect. NRHP criteria are identified in Table 3.20-3.



DONLIN GOLD PROJECT EIS

CULTURAL RESOURCES AREA OF POTENTIAL EFFECTS

NOVEMBER 2015 FIGURE 3.20-1

Table 3.20-3: Impact Levels for Cultural Resources under NEPA

Type of Effect	Impact Component	Effects Summary		
Effects on Cultural Resources	Magnitude or Intensity	**Low**: No detectable changes in integrity, or able to mitigate impacts through data recovery.	**Medium**: Measurable impacts to integrity not sufficient to affect NRHP eligibility, or able to mitigate impacts through data recovery	**High**: Loss of integrity for eligibility to the NRHP and unable to mitigate impacts through data recovery.
	Duration	**Temporary**: Resource integrity would be reduced but short term mitigation would be expected to restore pre-activity levels.	**Long-term**: Resource integrity would be reduced but effects could be mitigated.	**Permanent**: Chronic effects; resource would not be anticipated to return to previous levels.
	Geographic Extent	**Local**: Impacts limited geographically to discrete portions of EIS Analysis Area. Significance is defined in 36 CFR 60.4.	**Regional**: Affects resources with significance throughout the EIS Analysis Area. Significance is defined in 36 CFR 60.4.	**Extended**: Affects resources with significance beyond the region or EIS Analysis Area. Significance is defined in 36 CFR 60.4.
	Context	**Common**: Affects cultural resources not eligible for the NRHP, but may be protected by other laws. The portion of the resource affected does not fill a unique social or ecological role within the locality or the region.	**Important**: Affects cultural resources eligible for the NRHP that fill a rare social or cultural role either within the locality or the region, or the rare resource is protected by the *Wild and Scenic Rivers Act,* or *Wilderness Act*. The Iditarod National Historic Trail is considered an important resource for the purposes of this analysis; the historic and scenic resources associated with the trail are considered rare within the region. However, designation as a state or federal conservation unit, such as National Park or State Game Refuge, does not in and of itself constitute a unique resource.	**Unique**: Affects cultural resources eligible for the National Register NRHP or the affected resource is protected by the *Wild and Scenic Rivers Act* or *Wilderness Act* and/or the portion of the resource affected fills a unique ecosystem role within the locality or the region.

3.20.3.1.2 DETERMINATIONS OF EFFECTS UNDER SECTION 106 OF THE NHPA

Under the NHPA, historic properties are defined as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the Secretary of the Interior (36 CFR 800.16(l)(1)). Under 36 CFR Part 800, impacts to cultural resources are evaluated by determining if there is no effect, no adverse effect, or adverse effect. In compliance with the NHPA, the Corps' *Procedures for the Protection of Historic Properties* characterizes projects as having a potential for the following effects findings: *no potential to cause effects*, *no effect*, *no adverse effect*, and *adverse effect* (33 CFR Part 325, Appendix C).

A significant or *adverse effect* to historic properties, as defined both by 36 CFR 800.5 and 33 CFR Part 325, Appendix C would include:

- An undertaking that alters, directly or indirectly, any of the characteristics of a historic property that qualify that property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration must be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP.
- *Adverse effects* on historic properties include, but are not limited to: (i) physical destruction of or damage to all or part of the property; (ii) alteration of a property, including restoration, rehabilitation, repair, maintenance, and stabilization; (iii) removal of the property from its historic location; (iv) change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance; and (v) introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features.
- Effects may be considered *not adverse* when the property is of value only for its potential contribution to archaeological, historical, or architectural research, and when such value can be substantially preserved through the conduct of research.

As Table 3.20-4 shows, the determination of effect following 36 CFR 800.5 and 33 CFR Part 325, Appendix C is most similar to the "Magnitude or Intensity" parameter used to address impacts under NEPA (compare with Table 3.20-3).

Table 3.20-4: Determination of Effect under NHPA

Type of Effect	Impact Component	Effects Summary		
Changes to Cultural Resources Character	Magnitude or Intensity	**No Potential to Cause Effects or No Effect**	**No Adverse Effect**: Measurable impacts to integrity not sufficient to affect National Register eligibility.	**Adverse Effect**: Loss of integrity for eligibility to the National Register of Historic Places.

3.20.3.1.3 ANALYSIS OF EFFECTS UNDER THE NATIONAL TRAILS ACT

The analysis area for the INHT analysis included portions of the trail located in the Susitna Lowlands and Alaska Range physiographic provinces. The analysis was conducted at the scale of SQRUs presented in the INHT CMP (BLM 1982). Though it is assumed that impacts to scenic quality would be greatest when viewed from the air during winter (snow covered) conditions (see Section 3.17, Visual Resources), the assessment of impacts to scenic quality and character-defining features was completed from the perspective of recreationists on the INHT, consistent with the assessment in the INHT CMP (1982).

The impact assessment for the INHT focused on the following interrelated resources: visual resources, historic and cultural resources, and historic and cultural setting.

The degree to which the proposed project could result in adverse impacts to the INHT was based on the degree to which potential alteration of the INHT would be amenable to minimization or mitigation, after taking into account impact-reducing design features. Through consultation and the PA process, mitigation measures will be identified to address adverse and residual effects.

The following indicators were used to determine potential impacts to the INHT that may result from the proposed project:

- Change in scenic quality, as defined in the INHT CMP (1982);
- Alteration of character-defining features and integrity (location, design, setting, materials, workmanship, feeling, and association);

Impacts to INHT scenic quality, character-defining features, and integrity was assessed in terms of magnitude, exposure (duration), geographic extent, and context (Table 3.20-3 and Table 3.20-5). Specific procedures, such as the Contrast Rating Procedure (BLM 1986a), are described in Section 3.17, Visual Resources. The outcome of this assessment was used to determine the extent to which the proposed action or alternatives would alter the historic character and setting of the INHT and/or impact the nature and purpose of the trail, trail resources, qualities, values, uses and associated settings. Exposure and geographic extent was determined by overlaying the centerline of the INHT historic route and associated SQRU on the pipeline ROW and viewshed (see Section 3.17.3.1 Visual Resources – Methods), and calculating the following metrics:

- The number of crossings (intersections) between the INHT historic route and the proposed pipeline ROW;
- The length (miles) of the INHT historic route that crosses the viewshed of the proposed pipeline ROW within the immediate foreground (<0.5 mile), and foreground-middleground (0.5 - 5.0 miles).

Table 3.20-5: **Analysis** of Effects – **Iditarod National Historic Trail**

Type of Effect	Impact Component	Effects Summary		
Effects on INHT Scenic Quality and Character-Defining Features	Changes in Scenic Quality Rating Units	**DISCRETE –**Impacts would not alter key factors used to rank scenic quality in affected SQRU(s) and no change to scenic quality score for affected SQRUs would result.	**LIMITED** – Impacts would result in change of at least one key factor used to rank scenic quality in affected SQRU(s); a change to scenic quality score for affected SQRUs would result; however scenic quality values for two or more adjacent SQRUs within a similar physiographic unit would not occur.	**EXTENDED –** Impacts would result in change of at least one key factor used to rank scenic quality in affected SQRU(s); a change in key factor values would and/or scenic quality score for affected SQRUs would result in two or more adjacent SQRUs within a similar physiographic unit.

3.20.3.1.4 METHODS AND ASSUMPTIONS FOR IMPACT ANALYSIS

As described in Section 3.20.2, a number of cultural resource surveys have occurred for the Donlin Gold Project within the APE. However, surveys have not occurred for 100 percent of the APE. Where they have occurred, the area covered by cultural surveys is broader than the proposed project component footprints in order to account for changes in project scope / footprint. This impacts analysis is based upon current project proposals and the APE as currently defined (Donlin Gold 2015c).

Under Section 106 of the NHPA, effects to NRHP-eligible cultural resources (historic properties) and unevaluated resources must be considered prior to project implementation. In accordance with 36 CFR 800.14(b)(1)(ii), because effects on historic properties cannot be fully determined prior to the approval of an undertaking, a Programmatic Agreement (PA) will be used to outline the process for identification, evaluation of properties and effects, and minimization or mitigation of effects. To facilitate compliance with Section 106 of the NHPA, a PA is under development by the lead federal agency (the Corps), the Alaska SHPO, the Advisory Council on Historic Preservation, and other consulting parties. The federal agency (i.e., the Corps) is responsible for the PA under provisions of 36 CFR 800.14(a)(1) and(b). The PA will provide agencies with a framework for completing the Section 106 framework in a phased manner. This will include identification and evaluation of cultural resources, consultation, and mitigation of effects. It will also define treatment protocols and the process by which those protocols would be implemented.

Under the terms of the PA, a Cultural Resources Management Plan (CRMP), including an unanticipated discovery plan, will also be prepared to direct Donlin Gold in the event of a discovery during construction or operations. The CRMP will identify measures to mitigate adverse effects. The PA will include stipulations for the inadvertent discovery of human remains. Additional mitigation measures would be outlined in the PA. Anticipated effects to cultural resources from project activities would be assessed as final design or construction plans are submitted to administering agencies for approval. A NAGPRA plan will also be implemented and address the process for the treatment of Native American human skeletal remains and grave items that may be found on federal lands.

For the purpose of this analysis, the following assumptions are made:

- cultural resources identified within the APE are assumed to be NRHP-eligible unless otherwise specified,
- impacts to cultural resources will be avoided whenever possible or legally required,
- ongoing tribal and agency consultation will occur to help confirm the APE, and
- TCPs or areas of traditional or spiritual significance may be identified and impacts to these resources would be addressed in accord with the PA.

It is important to note that the APE for the mine site is substantially larger than the proposed footprint; while cultural resources within the developed area of the mine site are expected to be impacted, not all cultural resources within the APE are expected to be disturbed. The construction APE for the natural gas pipeline and transportation components is also larger than the actual area needed for clearing and construction. Construction planning would take the presence of identified cultural resources into account, and in final engineering design, cultural resources would be avoided if possible.

If avoidance of cultural resources is not feasible, these resources could be subject to partial or complete removal, thereby reducing or eliminating important historical associations and the potential for these resources to contribute information on the prehistory or history of the region. If it is not possible to avoid cultural resources through relocation of proposed project facilities, then necessary steps would be taken to minimize adverse impacts. If necessary, treatment strategies would be developed in accordance with the stipulations of the PA. Such measures could include relocation of proposed facilities, construction monitoring, archaeological data recovery, or other mitigating measures.

3.20.3.2 ALTERNATIVE 1 – NO ACTION

Under Alternative 1, the No Action Alternative, development of the Donlin Gold Project and construction of transportation facilities, the natural gas pipeline, and associated infrastructure would not be approved or permitted. The PA for this project would not be executed, but the regular Section 106 process is expected to apply to any other projects in the area requiring federal authorization. Consequently, there would be no direct, indirect, or cumulative impacts to cultural resources and historic properties as a result of implementation of the No Action Alternative. Alternative 1 would have no effect on climate change as related to cultural resources and historic properties in the EIS Analysis Area.

3.20.3.3 ALTERNATIVE 2 – DONLIN GOLD'S PROPOSED ACTION

Under Alternative 2 (Donlin Gold's Proposed Action), development of the Donlin Gold Project would occur and would include mine site development, construction of the road and other transportation infrastructure, natural gas pipeline, and associated facilities. Direct and indirect impacts to cultural resources may result from these actions. For example, direct damage to or removal of cultural resources within the APE may occur as a result of construction, while indirect changes to setting could impact resources within and/or beyond the APE.

Numerous cultural resources have been identified as a result of surveys of project components in Alternative 2, inclusive of the mine site, transportation facilities, and pipeline ROW. As currently designed, 36 cultural resources (including 8 resources within the mine site, 1 within the transportation facilities, and 27 within the pipeline component) have the potential to be affected by implementation of Alternative 2. Of the total resources identified to date as being associated with Alternative 2, 8 cultural resources have been recommended as eligible for listing in the NRHP and eligibility evaluation is incomplete for 2 sites, but these are also assumed eligible for the purposes of analysis. Segments of the INHT have AHRS numbers; however, none of those segments are within the APE. In addition to the PA that will be prepared by the consulting parties under Alternative 2 to direct treatment of cultural resources, Donlin Gold will implement project design features to minimize impacts, including construction planning to avoid cultural resources if possible, and restrictions on general public access to areas of active construction and operations at the mine site and transportation facilities. Donlin Gold will also establish policies to prohibit employees, contractors, and others associated with the project from damaging, destroying, looting, or vandalizing cultural resources.

3.20.3.3.1 MINE SITE

Cultural resources pedestrian survey and testing occurred within the mine site along high probability areas (representing approximately 12 percent of the total mine site acreage) as determined by land-use models and helicopter survey. Survey of the proposed mine site has resulted in the identification of 8 resources within the mine site APE (Table 3.20-6). Documented archaeological sites include 2 historic cabin ruins, 4 prehistoric lithic scatters, and 2 historic ditches. Five of the sites have been recommended as not eligible for listing in the NRHP, while one site (Lewis Gulch Cabin ruins, IDT-00260) has been recommended as eligible. Two sites are unevaluated but assumed eligible, including one historic archaeological cabin ruins site (IDT-00261) and one prehistoric lithic scatter (IDT-00292). Evaluation was not completed because they are not anticipated to be within the areas planned for development, and/or because additional information is needed to complete a full evaluation.

The Lewis Gulch Cabin ruins (IDT-00260) would be directly impacted by implementation of Alternative 2. Under the NHPA, the impacts to this site would be considered to be an adverse effect. However, data recovery could satisfactorily mitigate an adverse effect. One additional historic cabin site (IDT-00261) and a lithic scatter (IDT-00292) remain unevaluated pending additional research, but would not be affected by the proposed project. While located within the APE, the remaining sites not eligible or unevaluated for the NRHP would have no effect from implementation of Alternative 2. As noted above, the APE refers to a wider physical area employed for analysis, rather than the actual construction footprint. Not all resources within the APE would be affected by the project.

Impacts to cultural resources at the mine site would be medium in intensity due to direct impacts to one site recommended as eligible (IDT-00260) for the NRHP, with data recovery proposed for the site. Impacts would be permanent in duration as the resources would be removed from their original location. The extent of effects would be local, affecting a single site within the mine site area. As impacts would occur to cultural resources recommended as eligible for the NRHP that would be significant at the local level, effects would be important in context.

Table 3.20-6: Cultural Resources within the Alternative 2 Mine Site APE

Site Number	Type	Proposed Recommendation for NRHP Eligibility[1]	Criteria for Eligibility/ Comments	Proposed Effects Determination (NHPA)
IDT-00260	Lewis Gulch Cabin ruins (ca. 1910s)	Eligible	Criterion D (Information potential re: history of mining in Alaska)	Adverse Effect
IDT-00261	Cabin ruins (ca. 1950s to 1980s?)	Unevaluated	Additional data (year of construction) needed to fully evaluate under Criterion D	No Effect
IDT-00262	Prehistoric lithic scatter	Not Eligible	N/A	N/A
IDT-00263	Prehistoric lithic scatter	Not Eligible	N/A	N/A
IDT-00264	Prehistoric lithic scatter	Not Eligible	N/A	N/A
IDT-00265	Snow-Gulch to Ruby Gulch ditch	Not Eligible	N/A	N/A

Table 3.20-6: Cultural Resources within the Alternative 2 Mine Site APE

Site Number	Type	Proposed Recommendation for NRHP Eligibility[1]	Criteria for Eligibility/ Comments	Proposed Effects Determination (NHPA)
IDT-00266	Dome Creek to Quartz Creek ditch	Not Eligible	N/A	N/A
IDT-00292	Prehistoric lithic scatter	Unevaluated	Additional testing needed to evaluate under Criterion D	No Effect

Notes:

1 These are recommendations and have not been formally determined by the reviewing agencies, except for "Listed" resources.

Source: Reuther et al. 2004.

3.20.3.3.2 TRANSPORTATION FACILITIES

Archaeological surveys of the proposed transportation facilities have included the road corridor, 65 material sites, a proposed Angyaruaq (Jungjuk) Port site, the Bethel Yard Dock, two potential airstrips, and a camp site (Wooley et al. 2007, 2008). As a result of these studies, an archaeological site has been identified within the APE for transportation facilities (Table 3.20-7). The prehistoric occupation site (SLT-00094) is recommended as eligible for the NRHP (Wooley et al. 2007, 2008). While the site is located within the APE, it is not anticipated to be affected by the proposed action. No direct or indirect impacts to cultural resources are anticipated due to implementation of transportation facilities proposed in Alternative 2.

Table 3.20-7: Cultural Resources within Alternative 2 Transportation Facilities

Site Number	Type	Proposed Recommendation for NRHP Eligibility[1]	Criteria for Eligibility/Comments	Proposed Effects Determination (NHPA)
SLT-094	Prehistoric occupation	Eligible	Criterion D (Information potential re: prehistory of Alaska)	No Effect

Notes:

1 These are recommendations and have not been formally determined by the reviewing agencies, except for "Listed" resources.

Source: Wooley et al. 2007, 2008.

3.20.3.3.3 NATURAL GAS PIPELINE

Cultural resource surveys have occurred for the pipeline, with approximately half of the alignment being subjected to a pedestrian ground survey and half subjected to a helicopter assessment to identify high probability areas. Survey of the proposed pipeline ROW has resulted in the identification of 27 resources (Table 3.20-8) within the proposed pipeline APE, in addition to the INHT (total 28 resources). The INHT is considered eligible for nomination to the NRHP and is discussed under a separate heading later in this section.

Six resources are recommended as eligible for the NRHP. These include 5 prehistoric lithic scatters (IDT-00275, IDT-00288, TAL-00166, TYO-00278, and MCG-00071) and 1 prehistoric

animal bone scatter (TYO-00279). The remaining resources include the Happy River Roadhouse remains (TYO-00023, no longer present due to natural causes) and prehistoric lithic scatters which are recommended as not eligible for the NRHP (Reuther et al. 2013; Rogers et al. 2013).

Five cultural resources recommended as eligible for the NRHP would be affected by the proposed natural gas pipeline under Alternative 2, including 4 prehistoric lithic scatters (IDT-00288, TAL-00166, TYO-00278, and MCG-00071) and 1 prehistoric animal bone scatter (TYO-00279). Under the NHPA, the impacts to these sites would be considered to be an adverse effect. However, through consultation, data recovery could help to mitigate the adverse effect. The other identified prehistoric lithic scatter recommended as eligible for the NRHP (IDT-00275) would have no effect from implementation of Alternative 2; while located within the APE, this resource is not expected to be disturbed.

While specific ethnographic or TCP studies have not been undertaken for the project, local Alaska Native communities have noted that the pipeline route has historical and traditional cultural importance. As noted by a local resident, "*The pipeline route is an historic hunting route that people would take every few years to collect salt*" (Bob Charles, cited in URS 2013c). As previously discussed, a future evaluation of TCPs would occur in accord with the PA.

Impacts to cultural resources from the construction, operations, and closure of the pipeline would be medium in intensity due to direct impacts to five cultural resources recommended as eligible for the NRHP, with data recovery proposed for the sites. Impacts would be permanent in duration as the resources would be removed from their original locations. The extent of effects would be local, affecting five sites within the proposed pipeline area. As impacts would occur to cultural resources recommended as eligible for the NRHP that would be significant at the local level, effects would be important in context.

Table 3.20-8: Cultural Resources within or adjacent to the Alternative 2 Pipeline Corridor

Site Number[1]	Type	Proposed Recommendation for NRHP Eligibility[2]	Criteria for Eligibility/Comments	Proposed Effects Determination (NHPA)
IDT-00275	Prehistoric lithic scatter	Eligible	Criterion D (Information potential re: prehistory of Alaska Range)	No Effect
IDT-00276	Prehistoric lithic scatter	Not Eligible	NA	NA
IDT-00277	Prehistoric lithic scatter	Not Eligible	NA	NA
IDT-00278	Prehistoric lithic scatter	Not Eligible	NA	NA
IDT-00279	Prehistoric lithic scatter	Not Eligible	NA	NA
IDT-00280	Prehistoric lithic scatter	Not Eligible	NA	NA
IDT-00283	Prehistoric lithic scatter	Not Eligible	NA	NA
IDT-00286	Prehistoric lithic scatter	Not Eligible	NA	NA

Table 3.20-8: Cultural Resources within or adjacent to the Alternative 2 Pipeline Corridor

Site Number[1]	Type	Proposed Recommendation for NRHP Eligibility[2]	Criteria for Eligibility/Comments	Proposed Effects Determination (NHPA)
IDT-00287	Prehistoric lithic scatter	Not Eligible	NA	NA
IDT-00288	Prehistoric lithic scatter	Eligible	Criterion D (Information potential re: prehistory of Alaska Range)	Adverse Effect
IDT-00289	Prehistoric lithic scatter	Not Eligible	NA	NA
IDT-00291	Prehistoric lithic scatter	Not Eligible	NA	NA
MCG-00071*	Prehistoric lithic scatter	Eligible	Criterion D (Information potential re: prehistory of Alaska Range)	Adverse Effect
MCG-00073*	Prehistoric lithic scatter	Not Eligible	NA	NA
MCG-00077*	Prehistoric lithic scatter	Not Eligible	NA	NA
TAL-00151	Prehistoric lithic scatter	Not Eligible	NA	NA
TAL-00152	Prehistoric lithic scatter	Not Eligible	NA	NA
TAL-00153	Prehistoric lithic scatter	Not Eligible	NA	NA
TAL-00163	Prehistoric lithic scatter	Not Eligible	NA	NA
TAL-00165	Prehistoric lithic scatter	Not Eligible	NA	NA
TAL-00166	Prehistoric lithic scatter	Eligible	Criterion D (Information potential re: prehistory of Alaska Range)	Adverse Effect
TAL-00177*	Prehistoric lithic scatter	Not Eligible	NA	NA
TAL-00178*	Prehistoric lithic scatter	Not Eligible	NA	NA
TYO-00023	Happy River Roadhouse ruins	N/A	[Site no longer exists due to natural causes]	NA
TYO-00278	Prehistoric lithic scatter	Eligible	Criterion D (archaeological information potential re: prehistory of Kuskokwim region)	Adverse Effect
TYO-00279	Prehistoric animal bone scatter	Eligible	Criterion D (archaeological information potential re: prehistory of Alaska range)	Adverse Effect
TYO-00307	Prehistoric lithic scatter	Not Eligible	NA	NA

Table 3.20-8: Cultural Resources within or adjacent to the Alternative 2 Pipeline Corridor

Site Number[1]	Type	Proposed Recommendation for NRHP Eligibility[2]	Criteria for Eligibility/Comments	Proposed Effects Determination (NHPA)
INHT	National Historic Trail – Susitna-Rainy Pass Route	Eligible	Pipeline corridor collocated with the INHT for 4.0 miles and adjacent (within 1,000 feet) for approximately 10.5 miles	Adverse Effect
INHT	National Historic Trail – Susitna-Goodman Pass Route	Eligible	Intersects APE at MP 132.1	Adverse Effect

Notes:

1 The * indicates 5 sites unique to Alternative 2; the remaining sites are common to both Alternatives 2 and 6A.
2 These are recommendations and have not been formally determined by the reviewing agencies.

Source: Reuther et al. 2013; Rogers et al. 2013.

Iditarod National Historic Trail

Under Alternative 2, the proposed pipeline corridor would impact two segments of the INHT located in the Alaska Range and Susitna Lowland physiographic provinces (Table 3.20-9; see also Section 3.15, Land Ownership, Management and Use). The Congressionally-designated INHT is considered eligible for nomination to the NRHP. Implementation of Alternative 2 would result in both direct temporary construction-related impacts and longer-term indirect impacts to the cultural setting through effects to visual resources. Specifically, the buried natural gas pipeline corridor under Alternative 2 would cross the INHT 13 times, and would be collocated with the INHT for 4.0 miles and in proximity (within 1,000 feet) for approximately 10.5 miles.

Construction of the proposed pipeline near portions of the INHT located in the Alaska Range and Susitna Lowlands physiographic provinces would occur during the winter months, between November and April. Impacts would be of medium intensity, resulting from the moderate to strong visual contrast of cleared areas, infrastructure, and exposed soils against the surrounding landscape. Temporary direct impacts from vegetation removal would affect the scenic quality and landscape character of the INHT during the construction period. Construction-related actions could be seen by winter recreationists where the trail intersects the proposed construction ROW (approximately 4 miles collocated), or where the INHT crosses the viewshed of the proposed construction ROW, approximately 9.5 miles (0 to 5 mile viewshed).

Construction infrastructure could temporarily affect landscape character of the INHT, particularly in the vicinity of the Shell and Happy River mainline camps and airstrips. Temporary construction activity at this location could be observed in the immediate foreground (<0.5 mile) by winter recreationists on the INHT between the Skwentna River and Onestone Lake. Additional temporary construction infrastructure, including winter routes and shoo-fly roads would result in crossings, collocation and proximity to the INHT. As noted in Table 3.16-3, Miles of Winter Routes Impacting the Iditarod National Historic Trail, four winter routes used for pipeline delivery and other supplies would result in 9 crossings, collocation for 3.9 miles, and proximity for 4.0 miles. Table 3.16-4 Miles of Shoofly Roads impacts the Iditarod

National Historic Trail shows that five shoofly road segments would result in 3 crossings, 1.2 miles of collocation, and 1.5 miles of proximity to the INHT. Viewer exposure to direct impacts resulting from pipeline installation would be similar to that described for vegetation removal. Temporary impacts related to pipeline installation could be observed by winter recreationists on the INHT where the proposed pipeline ROW intermittently crosses or intersects the trail between approximately MP 50-52 and MP 86-106.

Long-term operations-related impacts are discussed below by physiographic province.

Alaska Range Physiographic Province

The proposed ROW would cross, collocate, or be sited proximate to the INHT in three SQRUs characterizing the Alaska Range Physiographic Province: SQRU AR-06, AR-02, and AR-01 (Table 3.20-9).

Table 3.20-9: Interaction of the ROW Viewshed of the INHT relative to the Proposed ROW: Alaska Range

SQRU	Total Length of Trail in SQRU	Number of Crossings	Length of Colocations (miles)	Length of Trail Proximate to ROW (miles)	Length of Trail intersecting ROW Viewshed		
					Immediate Foreground (<0.5 miles)	Foreground-Middleground (0.5-5 miles)	Background (5-15 Miles)
AR-6	19.4	2	0	0.1	0.3	2.8	0.2
AR-2	15.6	0	0.7	1.0	0.6	1.0	0
AR-1	13.8	6	2.8	4.4	2.4	0	0

Scenic Quality Rating Unit AR-06

The portion of the INHT located in AR-06 would intersect the viewshed of the operational ROW for approximately 17 percent (3.3 miles) of this SQRU, corresponding largely to where the ROW would cross this unit at the southern terminus, as the trail emerges from the Alaska Range and enters the Tanana-Kuskokwim Lowlands. Direct effects to scenic quality would result from the ROW as a result of vegetation clearing. ROW edges would appear discrete and uniform in riparian and upland forested areas, particularly in winter season when cleared areas would create a bold line against surrounding evergreen vegetation. Visual contrast would be weak to moderate where the ROW parallels cleared areas or deciduous forest. Recreationists on the INHT would experience medium intensity impacts in the immediate foreground (<0.5 miles), and at a perpendicular angle. Viewer exposure would be transient, with the scale of the ROW appearing subordinate to existing landscape features. Aboveground portions of the pipeline would not be visible. Geographic extent of impacts would be limited.

Key factors of landform, vegetation, water, color, influence, and scarcity would not be altered; however a reduction in ranking of cultural modification from 2 to -2 could occur for those portions of the trail affected. Despite a reduction in the value for cultural modification, scenic quality would remain Class A (Table 3.20-10). Two character-defining features are located in SQRU AR-06: (1) Egypt Mountain, identified as an important landmark feature, and (2) the valley walls of the Alaska Range, identified as a view area. Neither feature would be affected by

the proposed ROW; diversity in visual experience along this portion of the trail would be maintained.

Scenic Quality Rating Unit AR-02 and AR-01

Scenic Quality Rating Units AR-02 and AR-01 are adjacent units, extending from the Skwentna River / Happy River confluence, across the Happy River Valley. The portion of the INHT located in AR-02 would intersect the viewshed of the operational ROW for approximately 10 percent of this unit, particularly in the southern portion located in the Happy River Valley. In this portion of the SQRU, the INHT would not cross the proposed ROW, would be collocated for approximately 0.7 miles, and the ROW would be sited proximate to the trail for 1.0 mile. Because the ROW separates from the INHT corridor at Threemile Creek, scenic quality attributes within the northern portion of this scenic quality rating unit would not be affected. Moderate intensity direct effects to scenic quality could result from the ROW as a result of discrete edges of the ROW formed by vegetation clearing. Viewer exposure would be intermittent and transient, and experience from the immediate foreground (<0.5 miles). Direct impacts would be limited. Key factors of landform, vegetation, water, color, influence, and scarcity would not be altered; however a reduction in ranking of cultural modification from 2 to up to -2 could occur. Despite a reduction the value for cultural modification, scenic quality would remain Class A (Table 3.20-10).

The portion of the INHT located in AR-01 would intersect the viewshed of the operational ROW for approximately 17 percent of this unit. Because of the natural variability in vegetation communities within this unit – including open areas of muskeg bogs – the bold line created from vegetation clearing in the ROW would not appear contiguous, and visual contrast would range from weak to strong. In this portion of the SQRU, the INHT would cross the proposed ROW 6 times, collocated for approximately 2.8 miles, and the ROW would be sited proximate to the trail for 4.4 miles. No change to scenic quality factors of landform, vegetation, water, color, influence, or scarcity is expected. Diversity in visual experience along this portion of the trail would be maintained. Long-term medium to high intensity impacts to scenic attributes of the INHT could reduce the value for cultural modification to -4; however, no overall reduction in scenic quality classification from Class A would occur (Table 3.20-10).

Indirect impacts to visual resources could result from proliferation of user trails stemming from the ROW, particularly in areas that cross, parallel, or are proximate to the INHT. Indirect effects could be of medium intensity, long-term, and would affect an important resource.

Table 3.20-10: Change in Key Factor used to Rank Scenic Quality Under Alternative 2 (Pre-project / Post-Project)

SQRU	Landform	Vegetation	Water	Color	Influence	Scarcity	Cultural Modification	SQC Score	SQC
AR-1	5/5	3/3	3/3	3/3	5/5	6/6	2/-4	27/21	A/A
AR-2	5/5	3/3	3/3	3/3	5/5	6/6	2/-2	27/23	A/A
AR-06	5/5	3/3	3/3	3/3	5/5	6/6	2/-2	27/23	A/A

Susitna Lowlands

The proposed ROW would cross, collocate, or be sited proximate to the INHT in five SQRUs characterizing the Alaska Range Physiographic Province: SQRU SL-04, SL-05, SL-06, SL-07, SL-08 (Table 3.20-11).

Table 3.20-11: Effects of the ROW Viewshed of the Iditarod National Historic Trail relative to the Proposed ROW: Susitna Lowlands

SQRU	Length of Trail in SQRU	Number of Crossings	Length of Colocations (miles)	Length of Trail Proximate to ROW	Length of Trail Intersecting ROW Viewshed		
					Immediate Foreground (<0.5 miles)	Foreground-Middleground (0.5-5 miles)	Background (5-15 miles)
SL-04	9.4	0	0	0	0	0	0
SL-05	15.6	0	0	0	0	0	0.4
SL-06	8.9	2	0	1.4	0.8	0	0
SL-07	9.4	0	0	1.9	0.4	0	0
SL-08	15.7	3	0.5	1.4	0.6	0.2	0

Long-term direct impacts could affect the INHT where it passes through SQRU SL-8, SL-7, SL-6, SL-5, and SL-4 in the Upper Matanuska Valley physiographic province (BLM 1982). Direct impacts to scenic quality and character defining features as described in the INHT CMP (BLM 1982) are discussed below.

Scenic Quality Rating Unit SL-08

Within SL-08, the INHT would be located within the viewshed of the operational ROW for approximately 5 percent (0.8 miles) of the unit, corresponding largely to areas where the ROW would parallel or intersect the trail (Table 3.20-11). For viewers situated on the trail, the ROW could be apparent as a wider and more uniform corridor particularly where it passes through dense forest characteristically typical in this area. The ROW edges would be discrete and uniform and could appear distinct and unnatural. These moderate to high intensity direct impacts could result in a reduction in the score for cultural modification from 2 to up to -2. There would be no change to scenic quality attributes of other factors, particularly the influence of landform, vegetation, and water. Consequently, the overall score for scenic quality would remain Class A (Table 3.20-12). The visual corridor directed toward the pass would remain a dominant visual element. However, the integrity of the landscape, as viewed from a significant viewpoint located at the western end of this SQRU (Confluence of the Skwentna and Happy Rivers) (BLM, 1982) could be reduced, as medium to high intensity impacts could result from discrete lines of the ROW visible from this viewer position. Views directed to the northwest across the Skwentna Rover valley would not be affected. Direct impacts to character defining features would be intermittent and experienced from the immediate foreground (<0.5 miles) and foreground-middleground distance zones (0.5 to 5 miles).

SL-07 is located north of the Skwentna River, extending from roughly the confluence with the Talachulitna River to south of McDoel Peak, and is typical of the foothills of the Alaska Range. Though several lakes (Shell Lake, Onestone Lake) are within a mile of the trail, these features

are seldom seen due to the spruce-poplar and lowland/upland spruce-hardwood forests. Surrounding mountains are identified as view areas, particularly the Shell Hills to the north. The proposed operational ROW would be proximate of the INHT for 1.9 miles. Where the trail and ROW are separated, views of the ROW would be blocked by existing forest vegetation. A reduction in the ranking of cultural modification from 2 to up to -2 could result in a reduction of scenic quality score from 16 to 12; thereby maintaining an overall scenic quality of Class B.

SL-06 is located at the intersection of the INHT and the Skwentna River. Similar to the Susitna River crossing, the intersection of the INHT and the Skwentna River provides "significant relief from the vast homogenous forests of the Susitna Lowlands" (BLM, 1982). The operational ROW would cross this unit at two locations on the north side of the Skwentna River. With the exception of where the proposed operational ROW crossed the INHT, views of the ROW would be shielded by existing forest vegetation. At crossings, impacts could be of high magnitude and visual contrast would be strong; however, because the ROW would cross at a perpendicular angle, viewer exposure would be minimized by recreationists moving through the trail. The ROW would be visible for approximately 0.8 miles, or 9 percent of the SQRU. The ranking of cultural modification could be reduced from -1 to -2; however, scenic quality would remain Class A. The Skwentna River, the primary factor contributing to scenic quality in this unit, would remain intact as the dominant visual element in this unit.

SL-05 is located in the Upper Matanuska Valley physiographic province east of Mount Susitna and Beluga Mountain, is homogenous with little visual interest or diversity. Scenic quality was ranked as Class C. Beluga Mountain is identified as both a viewing area and an important landmark feature (BLM 1982). Cultural modification was identified as a contributing factor to the reduction of scenic quality in this unit. Construction and operations of the proposed project could affect scenic quality attributes of this segment. The viewshed of the proposed project intersects this unit for approximately a half-mile where the ROW could be seen from the background distance zone (5-15 miles). Visual contrast of the proposed ROW as viewed from this location would be weak due to the low stature of surrounding vegetation and the consistency of weak lines of the ROW with existing lines at the toe slope of Beluga Mountain. Though the ROW could be detected by the trained or informed eye, it would not be a dominant feature on the landscape and would not command attention. Further, typical viewers would experience views of the ROW while traveling by dog sled or snow machine, thereby reducing both potential exposure time and degree to which the ROW would be a focal point to views. Impacts would be of low magnitude, intermittent and transient, and affect scenic resources classified as common. The value for cultural modification is not expected to be reduced; consequently no change in scenic quality classification of Class C would occur.

SL-04 is located in the Upper Matanuska Valley physiographic province, east of Mount Susitna where the trail crosses the Susitna River, has scenic quality attributes contributing the most to the setting. These include the openness of views experienced in this segment compared to surrounding areas where viewer extent is limited by forest. Mount Susitna is identified as both a view area and an important landmark feature (BLM, 1982). The proposed ROW would not affect scenic attributes of this scenic quality rating unit as it is located outside the viewshed of the ROW due to shielding of topography of Mount Susitna. No change in scenic quality classification would occur in this area due to operations of the proposed ROW.

Table 3.20-12: Change in Key Factor used to Rank Scenic Quality Under Alternative 2 (Pre-project / Post-project)

SQRU	Land-form	Vegetation	Water	Color	Influence	Scarcity	Cultural Modification	SQC Score	SQC
SL-04	1/1	3/3	5/5	3/3	0/0	6/6	2/-2	20/20	A/A
SL-05	1/1	3/3	3/3	1/1	0/0	1/1	-1/-1	9/8	C/C
SL-06	1/1	3/3	5/5	3/3	3/3	6/6	-1/-2	20/19	A/A
SL-07	3/3	3/3	3/3	1/1	3/3	1/1	2/-2	16/12	B/B
SL-08	5/5	3/3	3/3	3/3	5/5	6/6	2/-2	27/23	A/A

3.20.3.3.4 CLIMATE CHANGE

The Donlin Gold Project would contribute to climate change through the production of greenhouse gases as discussed in Section 3.8, Air Quality. The amount of greenhouse gas emissions from implementation of Alternative 2 is not likely to create climate change effects to cultural resources and historic properties. However, if current climate change trends persist, impacts to cultural resources and historic properties would likely be similar to those discussed in the Affected Environment (Section 3.20.2), including the potential loss of cultural resources and historic properties through melting permafrost and accelerated erosive processes. Cultural resources and historic properties would continue to potentially contribute to climate change science through evidence of historic climate patterns and historic adaptation measures.

3.20.3.3.5 SUMMARY – ALTERNATIVE 2

Using the identified NEPA impact criteria, the summary impact to cultural resources under Alternative 2 from the mine site and natural gas pipeline would be moderate (Table 3.20-13). This summary impact rating is based predominantly on the medium intensity direct impacts to NRHP eligible resources that would occur within the APE for the mine site and natural gas pipeline. Impacts to 6 cultural resources recommended as eligible in the NRHP would be considered an adverse effect under the NHPA. These resources include cabin ruins in the vicinity of the mine site (IDT-00260), four prehistoric lithic scatters in the vicinity of the pipeline (IDT-00288, MCG-00071, TAL-00166, and TYO-00278), and a prehistoric animal bone scatter in the vicinity of the pipeline (TYO-00279). However, through consultation, data recovery could help to mitigate the adverse effect for these 6 identified resources. Impacts to these resources would be permanent in duration because the resources would be removed from their original locations. Impacts would occur within the local areas of the mine site and the pipeline facilities. These cultural resources are recommended as eligible for the NRHP as archaeological sites with local importance to subregions of Alaska, making them important in context.

No impacts are anticipated to cultural resources in relation to the transportation facilities proposed under Alternative 2.

Moderate indirect impacts are estimated for segments of the INHT and cultural landscapes in relation to the proposed pipeline component. Effects to scenic quality of the INHT would result

in a reduction of scenic quality values compared to that classified during the INHT scenic quality inventory; however, no overall reduction in scenic quality class would occur. The effects would permanently alter aspects such as setting that contribute to the overall importance of these resources. With impacts to the INHT, a Congressionally-designated historic trail, effects would be important in context. Moderate to high intensity impacts would occur at discrete locations; however, viewer exposure would be transient and episodic. The geographic extent of impacts would be extended as scenic quality of adjacent SQRUs would be affected.

These effects determinations take into account impact reducing design features (Table 5.2-1 in Chapter 5, Impact Avoidance, Minimization, and Mitigation) proposed by Donlin Gold and also the Standard Permit Conditions and BMPs (Section 5.3 in Chapter 5, Impact Avoidance, Minimization, and Mitigation) that would be implemented. Several examples of these are presented below.

Design features most important for reducing impacts to cultural resources include:

- Where an important cultural resource site was identified near the proposed project upriver port site, a community-based excavation project was undertaken to involve the community in scientific documentation of the site, thereby avoiding loss of context for the cultural resource.
- Pipeline routing decisions were made taking into account baseline archaeological studies to avoid identified cultural resource sites and historic properties where practicable.
- Routing decisions to minimize visual impacts to the INHT.
- Collocation of the proposed pipeline with the INHT, where appropriate, reduces multiple crossings of the Trail by the pipeline and thereby reduces the possibility that the pipeline ROW may become used as a separate trail.
- Donlin Gold, the Iditarod Historic Trail Alliance, and other user groups will work together to promote trail preservation and use. Any actual mitigation measures for impacts to the INHT would be agreed to as a part of the Section 106 compliance process and outlined in a Programmatic Agreement.
- Routing of preferred action through the Alaska Range north of Dalzell Gorge resulted in decreased overlap and impact to the INHT when compared to Dalzell Gorge Alternative 6A.
- Pipeline construction schedules were adjusted to minimize impacts to peak periods of recreation and tourism activities in the area, e.g., recreation uses of the INHT for annual events.

Standard Permit Conditions and BMPs most important for reducing impacts to cultural resources include:

- Compliance with Section 106 Programmatic Agreement and Cultural Resources Management Plan, including adequate survey prior to ground breaking activities and protocol for inadvertent discovery of cultural resources.
- Developing spill prevention and response type plans as required by federal and state requirements. The plan(s) will prescribe effective processes and procedures to prevent

the spill of fuel or hazardous substances and include procedures to respond to accidental releases.

Table 3.20-13: Alternative 2 Impact Levels by Project Component

Impacts	Impact Level				
	Magnitude or Intensity	Duration	Geographic Extent	Context	Summary Impact Rating[1]
Mine Site					
Change to Archaeological Sites	Medium	Permanent	Local	Important	
Summary	Medium	Permanent	Local	Important	Moderate
Transportation Facilities					
Change to Archaeological Sites	No effect				
Summary					No effect
Pipeline					
Change to Archaeological Sites	Medium	Permanent	Local	Important	
Change to Aboveground Historic Resources	Medium	Permanent	Local	Important	
Change to Historic Trails (INHT)	Medium	Permanent	Extended	Important	
Change to Cultural Landscape	Medium	Permanent	Extended	Important	
Summary	Medium	Permanent	Local to Extended	Important	Moderate

Notes:
1. The summary impact rating accounts for impact reducing design features proposed by Donlin Gold and Standard Permit Conditions and BMPs that would be required. It does not account for additional mitigation measures the Corps is considering.

3.20.3.3.6 ADDITIONAL MITIGATION AND MONITORING FOR ALTERNATIVE 2

The Corps is considering additional mitigation (Table 5.5-1 in Chapter 5, Impact Avoidance, Minimization, and Mitigation) to reduce the effects presented above. Additional mitigation measures include:

- Donlin Gold has submitted an initial draft of a Cultural Resources Management Plan for Corps review and approval, which includes management of cultural resources on BLM, state, and private land. The plan would prescribe an effective process for managing potential effects on these resources, and ensure that agreed-upon and approved procedures are established. At a minimum, the plan would include:
  - Training of workers regarding cultural resource issues and responsibilities;

- Measures to avoid or minimize impacts to cultural resources (e.g., flagging, monitoring);
- Standard protocols for any known cultural resources that may be exposed during project construction, operations, and reclamation;
- Prescribed actions to be taken in the event that unanticipated cultural resources are discovered, or known resources are impacted in an unanticipated manner; and
- Protocols for treatment of any discovered human remains.

· To the extent practicable, to mitigate visual impacts to sensitive cultural resources, clear a narrower construction ROW through sensitive areas, use HDD drilling under sensitive features, make a slight realignment of the construction ROW to avoid sensitive areas, and other appropriate measures.

The mitigation measures would ease potential impacts in the case of the discovery of new, unanticipated cultural resources during ground disturbing project activities. If these mitigation measures were adopted and required, the effects to cultural resources may be somewhat reduced, but impact ratings for cultural resources would remain the same for all project components.

3.20.3.4 ALTERNATIVE 3A – REDUCED DIESEL BARGING: LNG-POWERED HAUL TRUCKS

Implementation of Alternative 3A would require the construction and operation of additional LNG project components at the mine site compared to Alternative 2, which would result in a slightly larger facility footprint within the mine site. However, the increase in the footprint of Alternative 3A is minimal, and the other major project components would remain the same as Alternative 2. No additional cultural resources are likely to be encountered. As a result, direct and indirect impacts of Alternative 3A are anticipated to be the same as or similar to Alternative 2. Impacts associated with climate change would also be the same as discussed for Alternative 2. The effects determinations take into account applicable impact-reducing design features, as discussed in Alternative 2. No additional mitigation measures have been identified to reduce effects to cultural resources.

3.20.3.5 ALTERNATIVE 3B – REDUCED DIESEL BARGING: DIESEL PIPELINE

Since the diesel pipeline under Alternative 3B would be installed within the same ROW as Alternative 2, the direct and indirect impacts to cultural resources would be the same as or similar to Alternative 2. Impacts associated with climate change would also be the same as discussed for Alternative 2. The effects determinations take into account applicable impact-reducing design features, as discussed in Alternative 2. No additional mitigation measures have been identified to reduce effects to cultural resources.

3.20.3.6 ALTERNATIVE 4 – BIRCH TREE CROSSING (BTC) PORT

Under Alternative 4, the upriver port site proposed at Jungjuk under Alternative 2 would be moved downriver to Birch Tree Crossing (BTC) reducing the barge distance for freight and diesel out of Bethel bound for the mine site by about 38 percent. Under this alternative, the BTC Port road would be considerably longer than the road proposed under Alternative 2, but there

would be no other substantive changes from Alternative 2 at the mine site or pipeline components. A new 76-mile access road between the BTC Port and the mine site would be used for transporting fuel and cargo for the project, adding approximately 46 miles of road corridor to the undertaking, or about 2.5 times the length of the Angyaruaq (Jungjuk) Road proposed under Alternative 2.

Cultural resources inventory of the BTC Port site and extended road corridor resulted in the identification of four additional prehistoric lithic scatters. Two of the sites are within the vicinity of the proposed facilities; one is recommended as eligible for the NRHP and one is unevaluated because the site was not able to be relocated during the field survey. The eligible site is a prehistoric lithic scatter (RUS-00112) and the unevaluated site is a reported location for Avaucharak village (RUS-00091) (Table 3.20-14). The impacts to the prehistoric lithic scatter would be considered an adverse effect under the NHPA. However, through consultation, data recovery could help to mitigate the adverse effect, resulting in a medium intensity effect under the NEPA impact criteria. The reported village site is not anticipated to be affected by Alternative 4.

Direct and indirect impacts to the archaeological sites identified under Alternative 4 would be *important* in context, as this cultural resource is recommended as eligible for the NRHP, and is considered to have local importance to subregions of Alaska. Impacts would be *local* in extent, occurring within the local areas of the port facilities. These impacts would be *permanent* in duration because the resources would be removed from their original locations. Impacts from other components, including the mine site and pipeline, would be the same as Alternative 2.

Table 3.20-14: Cultural Resources within the BTC Port

Site Number	Type	Recommendation for NRHP Eligibility	Criteria for Eligibility/Comments	Effects Determination (NHPA)
RUS-00091	Avaucharak reported village location	Unevaluated	Unable to relocate/field verify site; Additional data needed to fully evaluate under Criterion D	No Effect
RUS-112	Prehistoric lithic scatter	Eligible	Criterion D (Information potential re: prehistory of Alaska)	Adverse Effect

Source: Wooley et al. 2007.

3.20.3.6.1 SUMMARY – ALTERNATIVE 4

Overall impacts to cultural resources from construction, operations, and closure of the proposed project under Alternative 4 would be similar to Alternative 2. Impacts associated with climate change would also be the same as discussed for Alternative 2. The effects determinations take into account applicable impact-reducing design features, as discussed in Alternative 2. No additional mitigation measures have been identified to reduce effects to cultural resources.

3.20.3.7 ALTERNATIVE 5A – DRY STACK TAILINGS

Implementation of Alternative 5A would not result in a larger total area of physical impact. As a result, no additional cultural resources are likely to be encountered. Under Alternative 5A, the impacts to cultural resources would remain the same as under Alternative 2. Impacts associated with climate change would also be the same as discussed for Alternative 2. The effects determinations take into account applicable impact-reducing design features, as discussed in Alternative 2. No additional mitigation measures have been identified to reduce effects to cultural resources.

3.20.3.8 ALTERNATIVE 6A – MODIFIED NATURAL GAS PIPELINE ALIGNMENT: DALZELL GORGE ROUTE

Under Alternative 6A, the number of cultural resources subject to potential impacts at the mine site and transportation facilities would be the same as under Alternative 2, but three fewer resources would be impacted under the Alternative 6A proposed pipeline. The types of sites impacted along the natural gas pipeline component are similar in composition, primarily consisting of prehistoric lithic scatters.

For the pipeline component, an archaeological survey of the Dalzell Gorge Route was accomplished during the 2010-2012 pipeline corridor studies. This survey resulted in the identification of 49 cultural resources within or adjacent to the pipeline corridor (Reuther et al. 2013). In addition to the INHT, the area within 300 feet of Alternative 6A pipeline includes 24 cultural resources (total 25) (Table 3.20-15); 23 of the resources are common to the proposed pipelines in both Alternatives 2 and 6A, while 2 resources differ between the alternatives (Table 3.20-8 and Table 3.20-15).

Six resources are recommended as eligible for the NRHP. These include five prehistoric lithic scatters (IDT-00275, IDT-00288, TAL-00166, TYO-00278, and MCG-00060) and one prehistoric animal bone scatter (TYO-00279). As in Alternative 2, the remaining resources include the Happy River Roadhouse remains (TYO-00023, no longer present due to natural causes) and prehistoric lithic scatters which are recommended as not eligible for the NRHP (Reuther et al. 2013; Rogers et al. 2013).

Five cultural resources recommended as eligible for the NRHP would be affected by the proposed natural gas pipeline under Alternative 6A, including four prehistoric lithic scatters (IDT-00288, TAL-00166, TYO-00278, and MCG-00060) and one prehistoric animal bone scatter (TYO-00279). Under the NHPA, the impacts to these sites would be considered to be an adverse effect. However, through consultation, data recovery could help to mitigate the adverse effect. The other identified prehistoric lithic scatter recommended as eligible for the NRHP (IDT-00275) would have no effect from implementation of Alternative 6A; while located within 300 feet of the proposed pipeline, this resource is not expected to be disturbed.

Similar to Alternative 2, the proposed pipeline corridor under Alternative 6A also has the potential to impact the INHT. The proposed pipeline corridor under Alternative 6A is collocated with the INHT for 14.5 miles and within 1,000 feet of the INHT for a total of 29.4 miles (44.0 miles in total), compared to 14.5 miles (4.0 miles collocated) under Alternative 2.

The construction and operation of the pipeline has the potential to impact the setting and historic intactness of segments of the INHT affected by the pipeline routing proposed under

Alternative 6A. Section 3.17, Visual Resources outlines where direct and indirect effects would occur to INHT. While limited, in some instances there would be a reduction of scenic attributes at discrete segments of the INHT. These impacts have the potential to reduce the value for cultural modification as described in the INHT CMP (BLM 1982).

Impacts to cultural resources would be greater for Alternative 6A than those for Alternative 2. Although the number of affected archaeological sites is nearly the same between the alternatives, Alternative 6A would include more extensive direct and indirect impacts to the INHT. As a result, potential impacts under the pipeline component of Alternative 6A would have a greater impact on an important resource (Congressionally designated INHT).

Regardless of the slight difference in quantity and composition of the documented resources between the two routing alternatives (Alternative 2 and 6A) impacts to cultural resources along the pipeline under Alternative 6A would be the same or similar to Alternative 2 as a similar number and type of NRHP-eligible sites would be affected. Impacts to segments of historic trails such as the INHT would be increased, but overall direct and indirect effects would generate the same conclusion. Impacts associated with climate change would also be the same as discussed for Alternative 2. The effects determinations take into account applicable impact-reducing design features, as discussed in Alternative 2. No additional mitigation measures have been identified to reduce effects to cultural resources.

Table 3.20-15: Cultural Resources within the Alternative 6A Pipeline Corridor

Site Number*	Type	Proposed Recommendation for NRHP Eligibility[1]	Criteria for Eligibility/Comments	Proposed Effects Determination
IDT-00275	Prehistoric lithic scatter	Eligible	Criterion D (Information potential re: prehistory of Alaska Range)	Adverse Effect
IDT-00276	Prehistoric lithic scatter	Not Eligible	N/A	N/A
IDT-00277	Prehistoric lithic scatter	Not Eligible	N/A	N/A
IDT-00278	Prehistoric lithic scatter	Not Eligible	N/A	N/A
IDT-00279	Prehistoric lithic scatter	Not Eligible	N/A	N/A
IDT-00280	Prehistoric lithic scatter	Not Eligible	N/A	N/A
IDT-00283	Prehistoric lithic scatter	Not Eligible	N/A	N/A
IDT-00286	Prehistoric lithic scatter	Not Eligible	N/A	N/A
IDT-00287	Prehistoric lithic scatter	Not Eligible	N/A	N/A
IDT-00288	Prehistoric lithic scatter	Eligible	Criterion D (Information potential re: prehistory of Alaska Range)	Adverse Effect
IDT-00289	Prehistoric lithic scatter	Not Eligible	N/A	N/A
IDT-00291	Prehistoric lithic scatter	Not Eligible	N/A	N/A
MCG-00060*	Prehistoric lithic scatter	Eligible	Criterion D (Information potential re: prehistory of Alaska Range)	Adverse Effect
MCG-00061*	Prehistoric lithic scatter	Not Eligible	N/A	N/A
TAL-00151	Prehistoric lithic scatter	Not Eligible	N/A	N/A

Table 3.20-15: Cultural Resources within the Alternative 6A Pipeline Corridor

Site Number*	Type	Proposed Recommendation for NRHP Eligibility[1]	Criteria for Eligibility/Comments	Proposed Effects Determination
TAL-00152	Prehistoric lithic scatter	Not Eligible	N/A	N/A
TAL-00153	Prehistoric lithic scatter	Not Eligible	N/A	N/A
TAL-00163	Prehistoric lithic scatter	Not Eligible	N/A	N/A
TAL-00165	Prehistoric lithic scatter	Not Eligible	N/A	N/A
TAL-00166	Prehistoric lithic scatter	Eligible	Criterion D (Information potential re: prehistory of Alaska Range)	Adverse Effect
TYO-00023	Happy River Roadhouse ruins	N/A	[Site no longer exists due to natural causes]	N/A
TYO-00278	Prehistoric lithic scatter	Eligible	Criterion D (archaeological information potential re: prehistory of Kuskokwim region)	Adverse Effect
TYO-00279	Prehistoric animal bone scatter	Eligible	Criterion D (archaeological information potential re: prehistory of Alaska range)	Adverse Effect
TYO-00307	Prehistoric lithic scatter	Not Eligible	N/A	N/A
INHT	National Historic Trail – Dalzell Route	Eligible	Pipeline corridor collocated with the INHT for 14.5 miles and within 1,000 feet of the INHT for a total of 29.4 miles (44.0 miles in total)	Adverse Effect

Notes:

1 These are recommendations and have not been formally determined by the reviewing agencies.
* These 2 sites are unique to Alternative 6A; the remaining sites are common to both Alternatives 2 and 6A.

3.20.3.9 IMPACT COMPARISON – ALL ALTERNATIVES

A comparison of the impacts to cultural resources by alternative is presented in Table 3.20-16.

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Table 3.20-16: Comparison of Impacts by Alternative*

Impact-causing Project Component	Alt. 2 – Proposed Action	Alt. 3A – LNG-Powered Haul Trucks	Alt. 3B – Diesel Pipeline	Alt. 4 – BTC Port (and Road)	Alt. 5A – Dry Stack Tailings	Alt. 6A – Dalzell Gorge Route
Cultural Resources within the Mine Site	Total: 8 · Recommended as NRHP Eligible: 1 (1 historic cabin) · Recommended as NRHP Not Eligible: 5 (3 prehistoric sites, 2 historic ditches) · Not Evaluated: 2 (1 prehistoric site, 1 historic cabin)	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2
Cultural Resources within the Transportation Facilities	Total: 1 · Recommended as NRHP Eligible: 1 (1 prehistoric site)	Same as Alternative 2	Same as Alternative 2	Total: 2 · Recommended as NRHP Eligible: 1 (1 prehistoric site) · Not Evaluated: 1 (unable to locate reported village location)	Same as Alternative 2	Same as Alternative 2
Cultural Resources within the Pipeline	Total: 28 · Recommended as NRHP Eligible: 7 (6 prehistoric sites; INHT) · Recommended as NRHP Not Eligible: 20 (20 prehistoric sites) · Not Evaluated: 0 · N/A: 1 (destroyed due to natural causes) · Pipeline route had historic and traditional cultural importance. · INHT collocated with ROW for 4.0 miles.	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2	Total: 25 (23 sites the same as Alt. 2 and 2 sites specific to Alt. 6A) · Recommended as NRHP Eligible: 7 (6 prehistoric sites; INHT) · Recommended as NRHP Not Eligible: 17 (18 prehistoric sites) · N/A: 1 (destroyed due to natural causes) · Pipeline route had historic and traditional cultural importance, same as Alt. 2. · INHT collocated with ROW for 14.5 miles.
Summary Impact Level						
Mine Site	The summary impact would be moderate. The predominant impact would be a medium intensity direct impact to 1 NRHP eligible resource within the mine site APE. Impacts to this site would be considered an adverse effect under NHPA; data recovery would be employed to mitigate adverse effect. Duration of effects would be permanent as resources would be removed from their original locations if the sites cannot be avoided. Effects would be local, affecting a single resource in the vicinity of the mine site. Context would be important as the NRHP eligible site would be important to subregions of Alaska.	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2	Impacts to INHT would be greater than under Alternative 2.

Table 3.20-16: Comparison of Impacts by Alternative*

Impact-causing Project Component	Alt. 2 – Proposed Action	Alt. 3A – LNG-Powered Haul Trucks	Alt. 3B – Diesel Pipeline	Alt. 4 – BTC Port (and Road)	Alt. 5A – Dry Stack Tailings	Alt. 6A – Dalzell Gorge Route
Transportation Facilities	The summary impact would be no effect. A site was located within the APE for transportation facilities, but is not anticipated to be affected.	Same as Alternative 2	Same as Alternative 2	The summary impact would be moderate. The predominant impact would be a medium intensity direct impact to 1 NRHP eligible resource within the transportation facilities. Impacts to this site would be considered an adverse effect under NHPA. Through consultation, data recovery could help to mitigate the adverse effect. Duration of effects would be permanent as resources would be removed from their original locations if the sites cannot be avoided. Effects would be local, affecting a single resource in the vicinity of the transportation facilities. Context would be important as the NRHP eligible site would be important to subregions of Alaska.	Same as Alternative 2	Same as Alternative 2
Pipeline	The summary impact would be moderate. The predominant impact would be a medium intensity direct impact to the INHT (recommended as eligible in NRHP) and 5 NRHP eligible resources within the pipeline APE. Impacts to sites recommended as eligible would be considered an adverse effect under NHPA. Through consultation, data recovery could help to mitigate the adverse effect. Construction of the ROW would likely permanently alter aspects such as setting that contribute to the overall importance of the INHT. Impacts to eligible resources would be local, but would be extended for SQRUs associated with the INHT. Duration of effects would be permanent as resources would be removed from their original locations if they cannot be avoided. Context would be important as NRHP eligible sites would be important to subregions of Alaska and Congressional designation of historic trail.	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2	Same as Alternative 2

Notes:

* The No Action Alternative would have no impacts to cultural resources.